FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list :—

1926

Sept. 10-18	**Two-Seater Light Aeroplane Competition, Lympne.**
Sept. 12	**Race Meeting at Prague.**
Sept. 18	**Grosvenor Challenge Cup, at Lympne.**
Oct.	**Schneider Cup Race at Norfolk, Virginia, U.S.A.**
Oct.	**Stefanik Prize Race at Prague.**
Oct. 24-28	**Coppa del Mare, Italy.**
Nov. 11-15	**Coppa d'Italia, Italy.**
Nov.-Dec.	**Paris Aero Show.**

EDITORIAL COMMENT.

THE third British Light 'Plane Competition is about to commence, and the response has, on the whole, been satisfactory—sixteen machines having been entered—although it is felt that the aircraft industry has not, perhaps, supported the meeting to quite the extent that might have been expected. Out of some 20 aircraft construction firms but 8 have entered machines, and of these two only are entirely new types. The prizes offered by the *Daily Mail* are on such a generous scale as compared with the cost of producing a light 'plane that purely as a financial speculation it might have been thought to be well worth while. On the other hand, of the remaining 6 "trade-built" and "trade-entered" machines several have been modified, either by the substitution of different engines or in other ways, to such an extent that they are virtually new types.

Lympne

A gratifying feature of this year's Lympne competition is the number of machines entered by amateurs—no fewer than 7 having been entered by various clubs, out of which number 4 are of new type. This is, we think, a healthy sign, and promises well for the future of the club movement. We could have wished that some of the subsidised light aeroplane clubs had also entered machines, although the standard club "Moths" are not, of course, eligible, on account of the weight of their "Cirrus" engines, and it would have been necessary to instal different engines. The De Havilland Aircraft Company has, however, shown what can be done in the way of converting this type, and presumably it was chiefly the question of funds which prevented the light aeroplane clubs from tackling the problem.

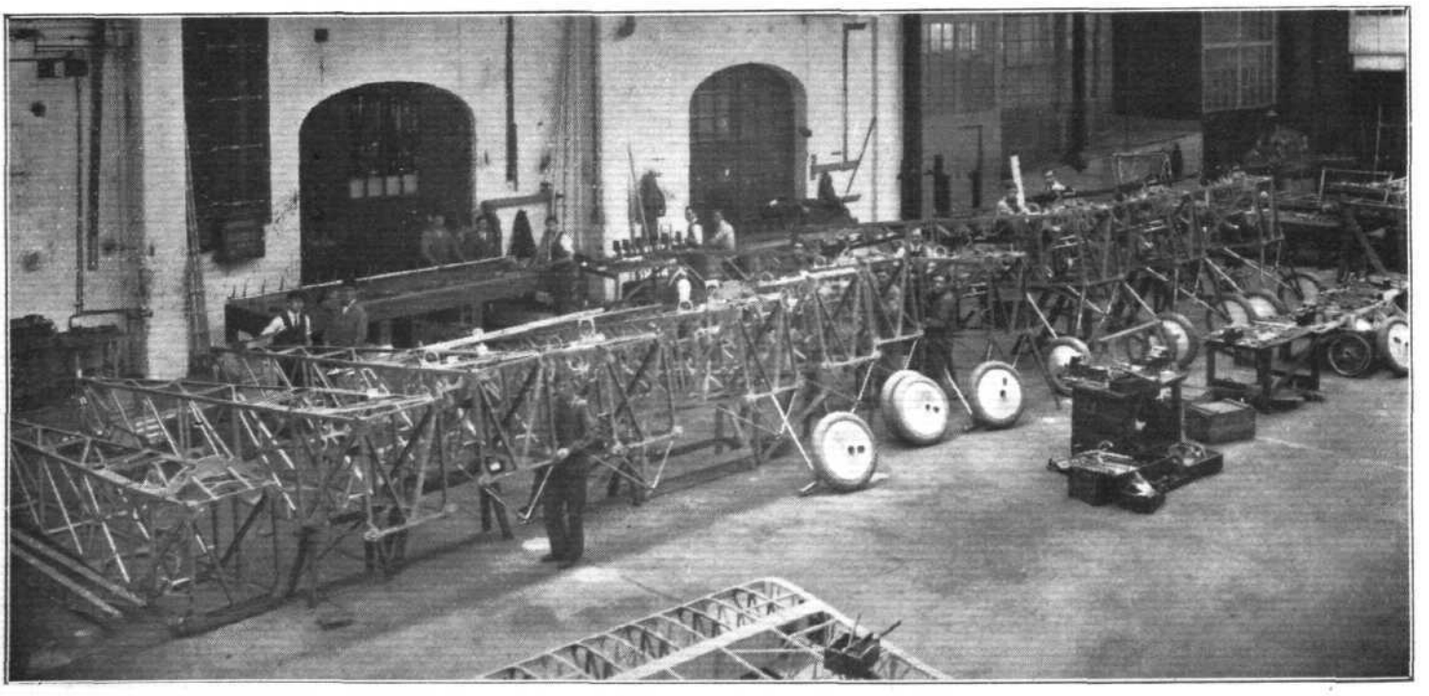
Concerning the competition itself, this is dealt with very fully in the following pages of this week's issue. We have thought it of interest to recall briefly the bases used for judging in previous light 'plane competitions, and the kind of tests which were demanded. This year's regulations differ from those

of previous years in many respects, but notably in that, for the first time, no limit is placed upon engine capacity. In the 1923 competition for single-seaters the maximum engine capacity allowed was 750 c.c. This was increased, for the two-seater competition of 1924, to 1,100 c.c. This year, however, an attempt has been made to limit engine power by stipulating that the engines of competing machines must not exceed 170 lbs. in weight, it having been decided that there was no rational reason for limiting engine capacity, which merely had the effect of encouraging very high engine speeds in order to get as much power as possible out of the restricted capacity permitted. Whether a limit on engine weight will not tend to have the same effect remains to be seen. Certainly the one new engine so far produced within the weight limit, the Armstrong-Siddeley "Genet," cannot be said to err on the side of excessive speed, developing its normal power at only 1,850 r.p.m.

The competition itself is one of carrying the greatest possible useful load on the smallest possible quantity of fuel over a total distance of 1,964 miles, the only stipulation being that the average speed made good over the course must not be less than 50 m.p.h. In order, however, to prevent machines from being overloaded and barely able to stagger around the course, they will be required, in one of the eliminating tests, to take off from rest and clear two barriers 25 ft. high, and placed 25 yards apart, the run required not exceeding 300 yards.

Taking it all round, the regulations this year appear to be fairly sound, and they should tend to produce really serviceable machines. The actual competition will be a fairly severe test in spite of the fact that few if any of the machines will need to fly at anything approaching full power, unless the week should prove to be exceptionally windy. We gather, however, that the stipulation of a minimum speed of 50 m.p.h. is to be interpreted as meaning that machines must keep above that figure in each of the circuits, and not that they may fall below this speed in some of the circuits provided they make up for it by reaching the minimum in the total average. This rather turns the competition into a form of reliability trial very similar to those held for motor cars, with the exception that competitors will not be required to keep to a fixed time-table so long as they cover each day's circuit within the hours from 8. a.m. to 8 p.m. Much will depend upon the weather conditions, and if there happens to be strong winds the faster machines will score by being able to maintain a higher average without approaching full throttle.

There is one feature of the regulations which we do not altogether agree with, and that is the planning of the various courses in such a way as to be clear of all towns. This is a very wise precaution in the case of towns *en route*, since otherwise competitors would either have to fly high or to make detours. In the case of the turning points, however, it does seem that there is no very good reason for not using the piers as turning points and thus giving visitors an opportunity to see the machines. As it is, all the turning points are so situated that practically nobody will get a glimpse of the machines. Thus at Brighton the turning point is the grand stand on the racecourse, well clear of the town. At Eastbourne three gasometers outside the town. At Hastings the Castle, some way from the beach. At Dover also far from the sea. At Manston aerodrome there is no need for propaganda, while on the north-eastern circuit the course lies behind the towns of Margate, Westgate and Birchington, and well clear of Herne Bay. We think an excellent opportunity for air propaganda has been lost by this arrangement.



QUANTITY PRODUCTION OF ALL-METAL AEROPLANES: A batch of Wibault scouts in course of construction at the Weybridge works of Vickers, Ltd. The Wibault is of French design, Vickers holding the British rights. The engines fitted are Bristol "Jupiters."

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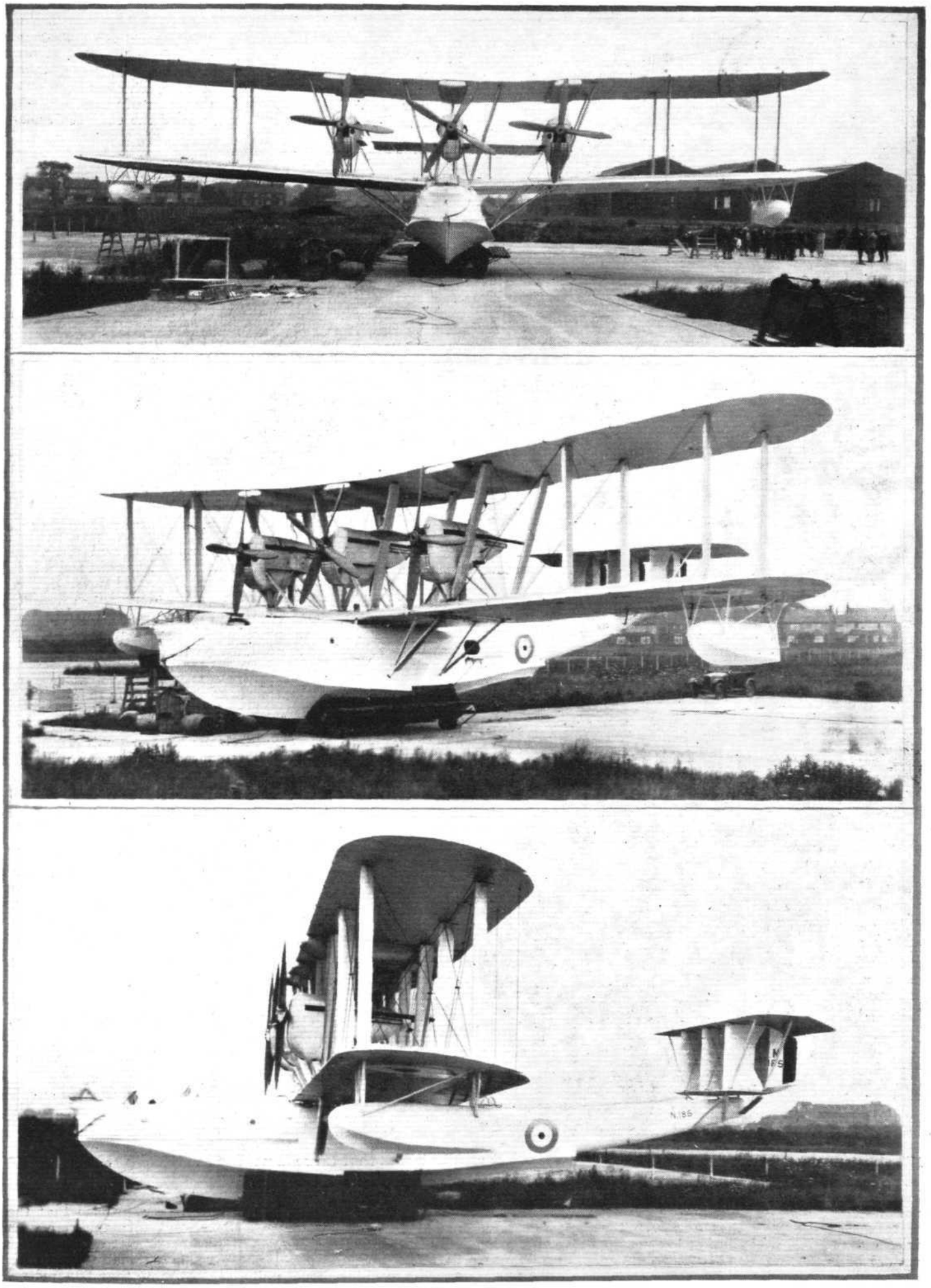


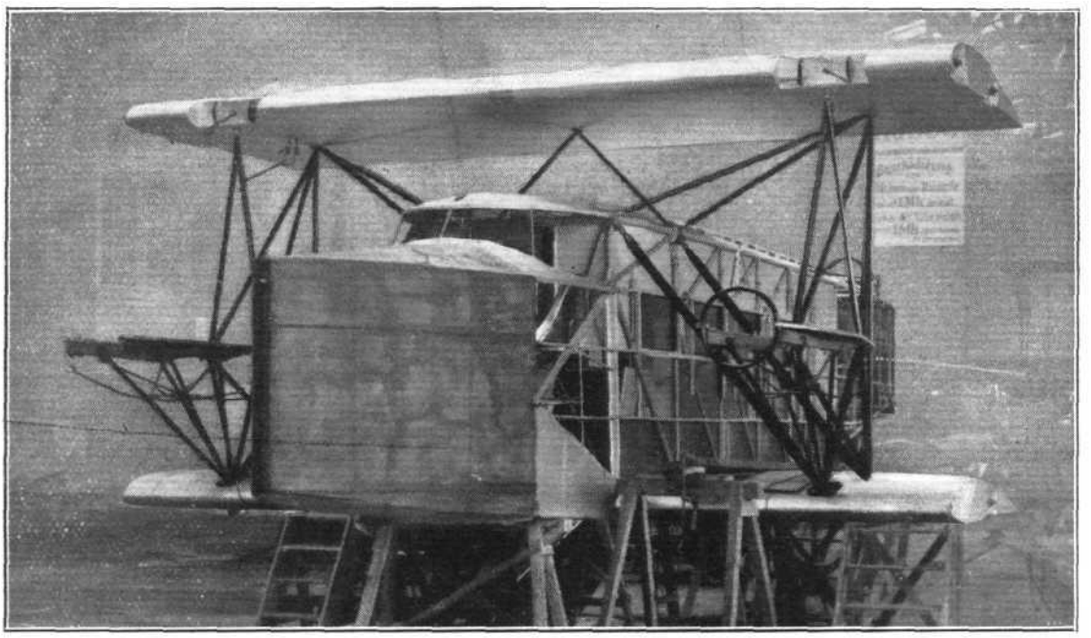
2,000 H.P.: These three photographs show the Blackburn "Iris" three-engined flying boat with Rolls-Royce "Condor III" engines.

THE ALBATROS L.73

A German Biplane with Two 240 h.p. B.M.W. IV Engines

WITH the raising of the restrictions hitherto placed by the Allies on German aircraft construction and operation, there is considerable activity of late in the German aircraft world, and several new types of commercial German machines, apart from those which took part in the recent seaplane competition at Warnemünde, have been produced, while others are rapidly coming along. A German designer with his hands tied is one thing. A German designer at liberty to do as he likes is quite another, and there is every probability that during the next few years the German Aircraft industry will make a very determined effort to secure a leading place in commercial aviation. Germany is favourably situated geographically for developing civil aviation, and it is no secret that, while they were prevented by the restrictions from doing very much actual construction, German designers and aeronautical scientists were working hard in the drawing offices and laboratories against the time when Germany should once more be able to take its place among the nations of Europe. The results of the work thus quietly but no less seriously carried out should be felt during the next few years, and it therefore becomes a matter of no little interest to follow as closely as may be the steps by which Germany is building up her fleet of commercial aeroplanes.

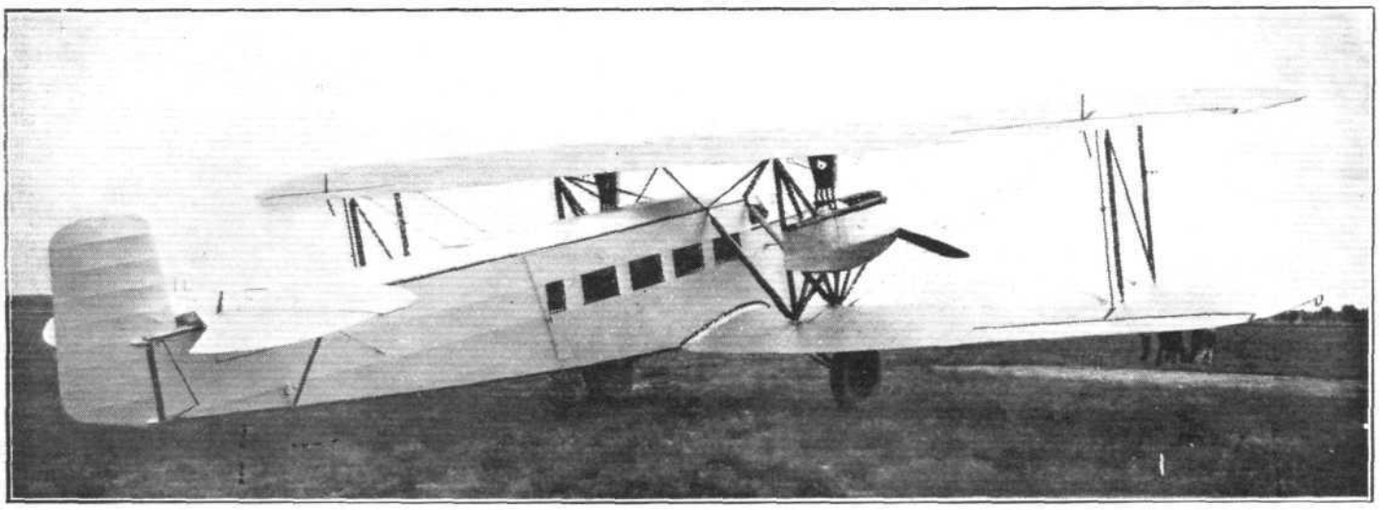
Some months ago we described and illustrated the single-engined biplane with slotted wings which was produced by the *Albatroswerke* of Berlin-Johannisthal as a newspaper carrier for the *Berliner Zeitung*. That machine was designed in the main by Dr. Ing. Gustav Lachmann, who has now severed his connection with the Albatros Works and taken up a position in Japan. Herr Schubert, who has been chief designer of the Albatros firm for a number of years, and who visited, with Herr Robert Thelen, one of the earliest German pilots, the Lympne light 'plane meeting in 1924, has recently turned his attention to twin-engined commercial aeroplanes, and the first of these to be produced is the Albatros L.73 which forms the subject of the following notes and illustrations.



The Albatros L. 73: Three-quarter front view of the fuselage, showing centre-sections, wing-engine mountings, &c., The bracing of the top centre-section is unusual, having no struts to the front spar.

Requirements

In designing the Albatros L.73 the following requirements were aimed at: the machine should have a useful load of 1,586 kg. (3,500 lb.) for a total engine power of 480 h.p., and should be able to carry this load with the greatest possible safety and reliability. Consequently the twin-engined arrangement was chosen, with the further proviso that the machine should be able to fly level and to manœuvre with only one engine running. At the same time it was desirable that the take-off should not exceed 260 metres (850 ft.), and the machine should pull up in not more than 200 metres (660 ft.). The tank capacity should be sufficient for a radius of action of 560 km. (350 miles), and the cruising speed should be 140 km./h. (87 m.p.h.). (This is rather low according to British ideas of modern cruising speeds.—ED.)



THE ALBATROS L.73: Three-quarter rear view. It will be noted that there is no fixed vertical fin, but that the rudder has a large horn balance.

The Wings

Both upper and lower planes are built in three sections, the lower centre-section running through the fuselage, and the upper centre-section being carried on struts arranged in the form of a letter W, as seen in front elevation. Both are of the same span, chord and section, and the spars of upper and lower wings lie approximately vertically above each other, thus simplifying the strut and bracing attachments. The top centre-section encloses the wing-section petrol tanks. The outboard portions of the wings are located by N-struts towards the tips and by rhomboidal struts at the wing engines. The bracing is in the form of streamline wires, both lift and anti-lift wires being duplicated. The inner bay of the wings, *i.e.*, from engine to fuselage, is braced by sloping struts running to the top longerons of the fuselage.

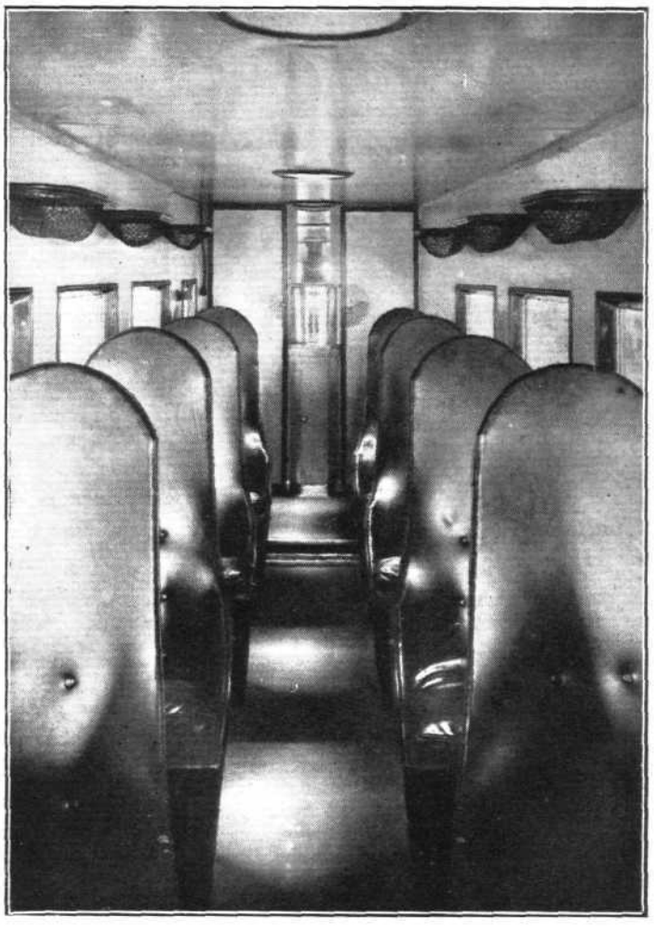
Ailerons are fitted to both top and bottom planes, and it is of interest to record that they are of the " slot " type, although the leading edge slot is not used on this machine.

Structurally the wings are of interest because of their all-metal construction. The main wing spars are of built-up girder form, with U-section flanges and lattice webs. The ribs, on the other hand, are of very light gauge steel tubing, arranged in the form of lattices, and have openings in the bottom flange so as to enable them to be dropped over the spars. Thus in case of damage individual ribs can easily be replaced. Fittings at the joints are of high-tensile steel. The internal drag bracing is arranged at both top and bottom of the spars in order to improve the resistance of the wings to torsion (the spars are approximately 8 in. deep). The covering is doped fabric. In connection with the wing spars it is of interest to mention that these are hinged or pin-jointed at points some 2 ft. 6 in., out from the engine struts. It is claimed that with this arrangement the bending moments in the outboard portions of the spars are reduced by something like 30 per cent.

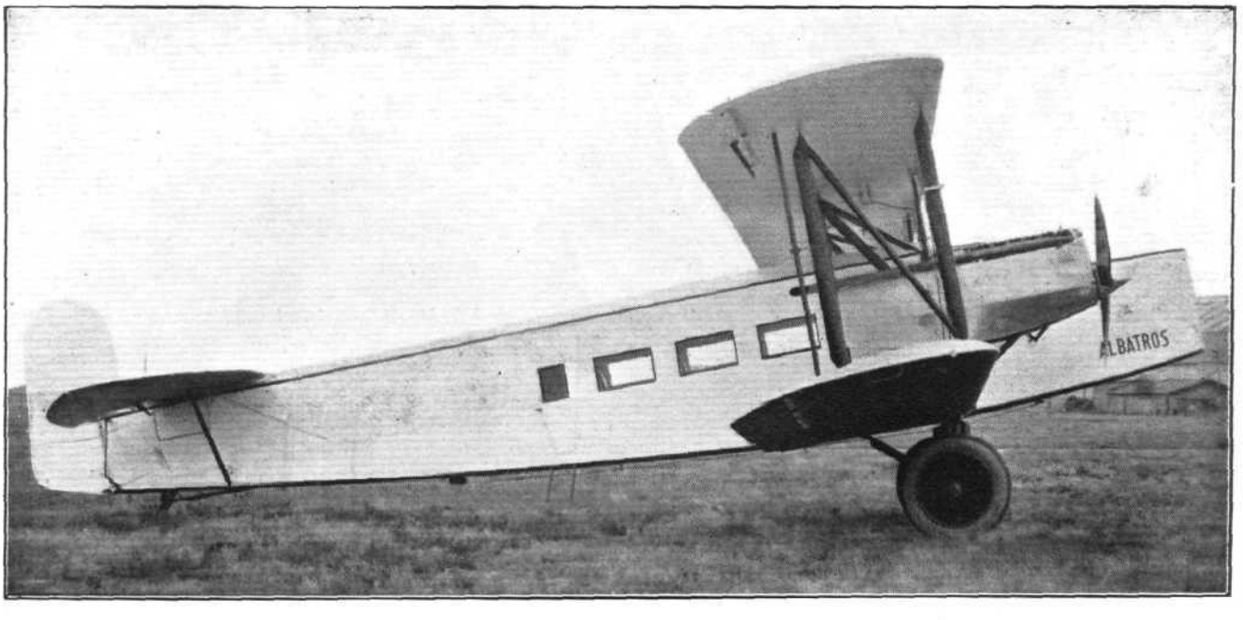
Fuselage

The fuselage is of rectangular section, built up of welded steel tube, the bracing in the rear portion being in the form of piano wire looped over quadrants as in the Fokker machines, while in the front portion of the fuselage diagonal struts are used. These do not, as is usually the case, run to opposite corners of the various panels, but from the bottom rear corner to a point two-thirds of the way up on the next strut in front, another and slightly shorter diagonal strut running from the top rear corner to the same point on the strut in front. The whole looks something like a series of letters thus : KKK. The reason for this peculiar form of fuselage bracing is not obvious.

The cabin, which has seating accommodation for eight passengers, occupies, of course, the full height of the fuselage, but the nose of the fuselage is dropped somewhat, forming a slightly curved deck in front of the cockpit, which is in continuation of the cabin and is provided with front windows, in the form of wind-screens. An opening on each side allows the pilot and engineer to lean over the side so as to be able to look straight down. The cockpit is entered by a door in the front wall of the cabin, while the extreme nose of the fuselage forms the main luggage compartment, another and smaller space for luggage being situated aft of the cabin. One of the accompanying photographs shows the view inside the cabin, looking aft. The seats, which have unusually tall backs, can be tipped over to form berths, in which case there is sleeping accommodation for four passengers.



THE ALBATROS L.73 : This view in the cabin, looking aft, shows the 8 seats. The back rests of the seats can be tilted to various angles, and for night flying every two seats make one sleeping berth, the seats being tipped up by means of handles and catches.



THE ALBATROS L.73: This new German passenger-carrier, here shown in side view, is fitted with two B.M.W. type IV engines of 230 h.p. each. The cabin has seating accommodation for 8 passengers.

The Tail

The tail surfaces are of steel-tube construction, welding being employed for joining the rib flanges, diagonals, etc., to the spars. The tail plane is of the trimming type, and the elevator is divided to accommodate the movement of the rudder. The latter is of the horn-balanced type, and there is no fixed vertical fin.

Undercarriage

The undercarriage is of the two-wheel type, with divided axle and vees under the engines, the front legs of the Vees being the telescopic members. The shock is absorbed partly by rubber blocks in compression, arranged in the form of two columns, one in front of and one behind the under-carriage leg, and partly by an oleo damper gear in the form of a piston with a small leak-hole. The travel of the wheels is about 8 in.

Power Plant

As already mentioned, the Albatros L.73 is a twin-engined machine, the engines fitted as standard being 240 h.p. B.M.W.'s of the type IV, similar to those used so extensively in the recent seaplane competition. These engines are six-cylinder verticals, and are mounted on the inner interplane struts, which are of somewhat complicated arrangement designed for perfect triangulation. The radiators are mounted between the leading edge of the top plane and the engines.

The petrol tanks are, as already indicated, housed in the top centre section, each having a capacity of 360 litres (79·25 galls.), and direct gravity feed is provided, each tank supplying its own engine.

Following are the main dimensions, weights, etc., of the Albatros L.73 :—

Length o.a.	14·6 m. (47 ft. 10 in.).
Height	4·7 ,, (15 ,, 5 ,,).
Span	19·7 ,, (64 ,, 7 ,,).
Wing area	92 sq. m. (990 sq. ft.).
Weight empty	2,914 kg. (6,420 lbs.).
Instruments, etc.	110 ,, (242 ,,).
Eight passengers	640 kg. (1,408 lbs.)
Luggage, etc.	160 ,, (352 ,,).
Paying load	800 kg. (1,760 lbs.).
Crew	160 kg. (352 lbs.).
Petrol	520 ,, (1,143 ,,).
Oil	50 ,, (110 ,,).
Cooling water	52 ,, (115 ,,).
Working load	786 kg. (1,720 lbs.).
Total flying weight	4,610 ,, (10,142 ,,).

Wing loading (full load), 50 kg./sq. m. (9·75 lbs./sq. ft.)
Power loading (full load), 10 kg./h.p. (22 lbs./h.p.).
Flying weight with half paying load, 4,210 kg. (9,275 lbs.).
Power loading with half paying load and one engine stopped, 38·6 lbs./h.p.
Maximum speed (ground level) at full load and power, 145 kms./hrs. (90 m.p.h.).
Maximum speed (ground level) with half paying load and one engine stopped, 110 km./hrs. (68·4 m.p.h.).
Landing speed with full load, 95 km./hrs. (59 m.p.h.).
Ceiling (full load), 3,000 m. (9,850 ft.). Climb to 1,000 m. (3,300 ft.) in 14 mins.; to 2,000 m. (6,600 ft.) in 32 mins.

SUPERMARINE "SOUTHAMPTONS" SOUTH COAST TOUR

It is of interest to note that a flight of four Royal Air Force Supermarine "Southampton" flying boats will, during the next fortnight, pay a series of visits to seaside resorts on the east and south coasts.

The flight will be based on Felixstowe air station for the flights to east coast towns, and on Calshot (Southampton) when visits to the southern resorts are being paid.

The first visit, to Cromer, was arranged to start on September 6. The Secretary of State for Air (Sir Samuel Hoare), who is at Sidestrand Hall, paid an official visit of inspection to the aircraft, and after lunch flew in one of the boats to Yarmouth, the second town to be visited, where they arrived that afternoon. They left for Felixstowe at 5.15 p.m.

A list of the towns to be visited and the dates on which the flying boats will arrive is given below.

In each case the Mayor (or Chairman of the Council) has been invited to visit the flying boats accompanied by other local notabilities.

Although the numbers of visitors who can be allowed on board the boats must necessarily be limited, arrangements have been made so that visitors to the resorts and local residents can inspect the aircraft at anchor from small boats.

Apart from Cromer, the "Southampton" machines will arrive at the first town of call shortly after 9 a.m., and after flying round will anchor at convenient moorings. Later they will give a flying demonstration and land again. They will proceed after lunch to the other town to be visited, where the same procedure will be followed.

The flight will be commanded by Squadron Leader A. Durston, A.F.C., the Officer Commanding No. 480 (Coastal Reconnaissance) Flight, Royal Air Force.

This flight carried out last year a long distance cruise with "Southampton" flying boats in Irish and Scottish waters. Recently two "Southampton" aircraft also carried out the first long-distance foreign cruise when they flew to Egypt and back, a distance of nearly 7,000 miles.

The "Southampton" type of flying boat, which is equpped with two Napier Lion engines, is the standard coastal reconnaissance aircraft of the R.A.F.

Programme of Visits

Monday, September 6 :—Cromer, forenoon; Yarmouth, afternoon.

Tuesday, September 7 :—Lowestoft, forenoon; Felixstowe, afternoon.

Wednesday, September 8 :—Southend, forenoon; Clacton, afternoon.

Thursday, September 9 :—Margate and Broadstairs, forenoon; Ramsgate, afternoon.

Monday, September 13 :—Sandown, Shanklin, Ventnor (two boats will visit these towns, commencing at Sandown).

Tuesday, September 14 :—Bournemouth, forenoon; Weymouth, afternoon.

Wednesday, September 15 :—Worthing, forenoon; Brighton, afternoon.

Thursday, September 16 :—(2 Boats). Hastings, forenoon; Eastbourne, afternoon.

Tuesday, September 21 :—Torquay, forenoon.

Alan Cobham's Homeward Dash.

Mr. ALAN COBHAM, accompanied by Sergt. Ward and Mr. Capel (of Armstrong-Siddeley Motors), has made a good start in his attempt to reach home from Australia in record time, for since leaving Port Darwin (on September 4) he has covered some 2,500 miles in 4 days.

On September 1 he continued on his flight across Australia from Alice Springs, and made an 800-mile flight to Katherine, Northern Territory. He landed en route at Banka in order to deliver a spare part for a motor car which was held up there, thereby saving the owners several weeks of waiting for the part to arrive in the ordinary way. Port Darwin was reached on the following day, and here, with the assistance of the crew of the Australian warship "Geranium," the D.H. 50 (Siddeley "Jagaur") was converted once more into a seaplane, and the machine and engine generally overhauled preparatory to its great dash to England.

Cobham left Port Darwin at 9.30 a.m. on September 4, the start being delayed as, owing to tidal conditions, temporary wheels had to be fitted to enable the machine to take off, and these gave some trouble. However, he got away in fine weather, and made a good crossing to Koepang, and stopped there the night.

Proceeding next day, Sunday, September 5, they reached Sourabaya, Java, 1,150 miles from Port Darwin. On September 6 they left Sourabaya early in the morning, and after nearly three hours' flight arrived at Batavia. After a short stop here they continued on to Muntok, and on September 7 they arrived at Penang, Malay, where we must leave them until next week.

It is reported from Basra that an Arab, believed to be the murderer of Mr. A. B. Elliott, who was Mr. Cobham's mechanic on the first stages of the flight to Australia, has been identified and arrested, and will be tried at Basra.

SEPTEMBER 9, 1926

FLIGHT

BRITISH LIGHT 'PLANE DEVELOPMENT & LYMPNE MEETING

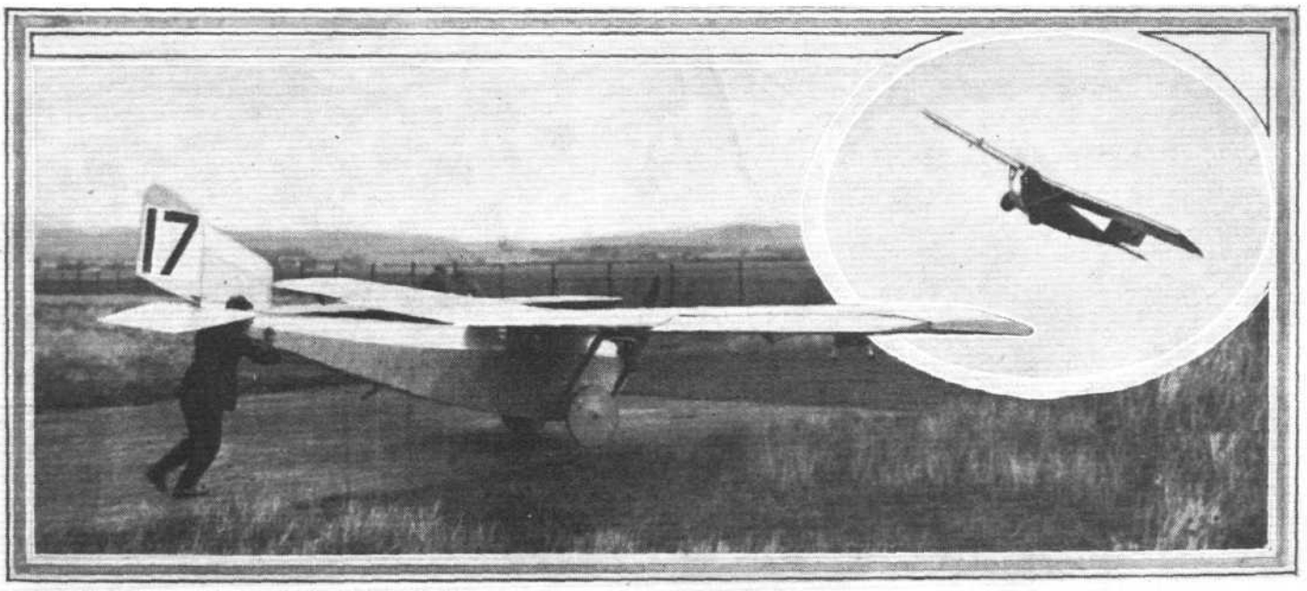
GREAT BRITAIN can justly claim to hold a leading position in the particular branch of aviation which has become known as the "light 'plane movement," being the only country in the world to have a number of well-established light aeroplane clubs at which members can learn to fly, and where, having obtained their "ticket," they can go for further practice to "keep their hands in." In addition to this, the clubs are doing a great deal of excellent propaganda work by organising meetings, inter-club races, etc., and the relatively small subsidy paid to the clubs by the Air Ministry can, we think, be regarded as a very sound investment from a national point of view. Thus, in the form of a club undertaking the light 'plane movement has already proved a success. There is, however, another sphere of light 'plane flying which may well in time become at least as important—namely, flying by private owners in their own machines. A special club exists—formed some months ago—of private aeroplane owners, and if it should prove possible to produce really good low-power aeroplanes at a reasonable price, there can be little doubt that the list of private owners would grow very rapidly, so that here again is a direct incentive to the development of low-power aeroplanes.

The meeting at Lympne Aerodrome, which commences to-morrow, September 10, for prizes totalling £5,000 offered by the proprietors of the *Daily Mail*, and several smaller prizes offered by others, is the result of an attempt to produce aeroplanes capable of cruising regularly at 50 m.p.h. at least, and capable of carrying at least one passenger in addition to the pilot. To ensure that these machines shall be economical to run, it is stipulated that the engines used must not weigh more than 170 lbs., and the first prize will go to the entrant of the machine which carries over a distance of nearly 2,000 miles the greatest useful load for each pound of petrol consumed in covering this distance.

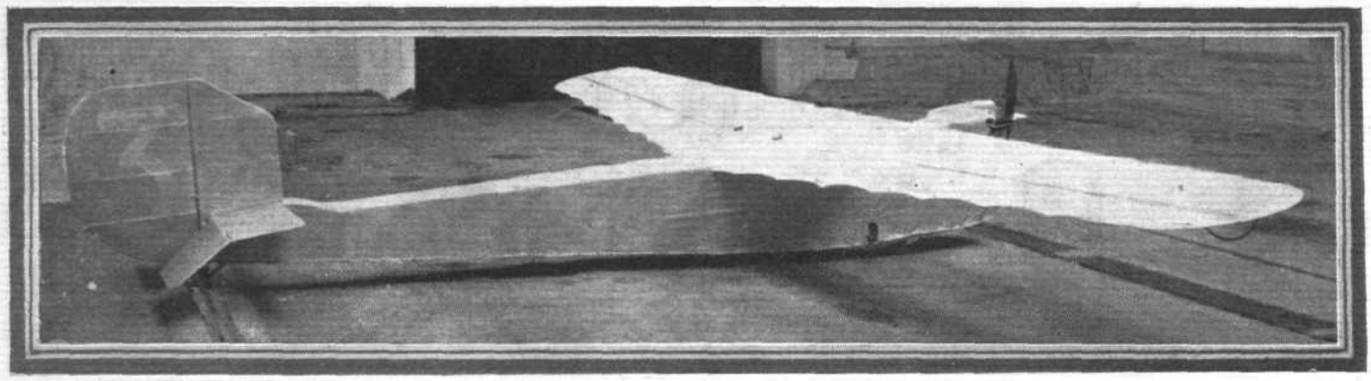
Before turning our attention to this year's meeting it may not be without interest to recall briefly the history of the light 'plane movement in Great Britain, since by so doing one is able to make comparisons and to form a clearer picture of the progress that has been made and the means that have been adopted for attaining this progress.

The First "Motor-Gliders."

Following upon the astounding results obtained by German experimenters in the Rhön hills during 1920 and 1921 with motorless aeroplanes or gliders, other nations began to turn their attention to the subject of gliding flight, notably France and England. In France a meeting was held at Combegrasse, and in England we had a very interesting week at Itford Hill and Firle Beacon, near Lewes, Sussex. The French pilot, Maneyrol, succeeded, at the Itford meeting, in remaining in the air for 3 hours 21 minutes 7 seconds on a Peyret tandem monoplane glider, thereby beating the previous "record" held by Germany. One result of Maneyrol's performance was that the majority of people formed the opinion that "there was nothing in it," and that, given sufficient wind, there was no reason why a glider should not remain aloft indefinitely, soaring in the rising currents: at any rate the duration of such a flight would be solely determined by the physical endurance of the pilot. The consequence was that, as far as England was concerned, nothing more came of the



A 1923 WINNER: The A.N.E.C. with Blackburne Engine which tied with the "Wren" for first prize. Mileage 87·5 miles per gallon.

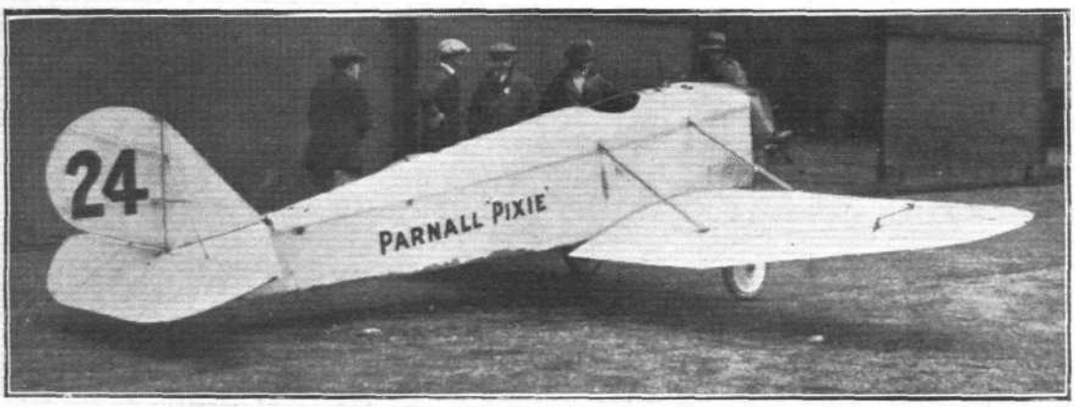


400 c.c. ONLY : The English Electric Co.'s "Wren," which in 1923 tied with the A.N.E.C. for first prize. Mileage 87·5 miles per gallon.

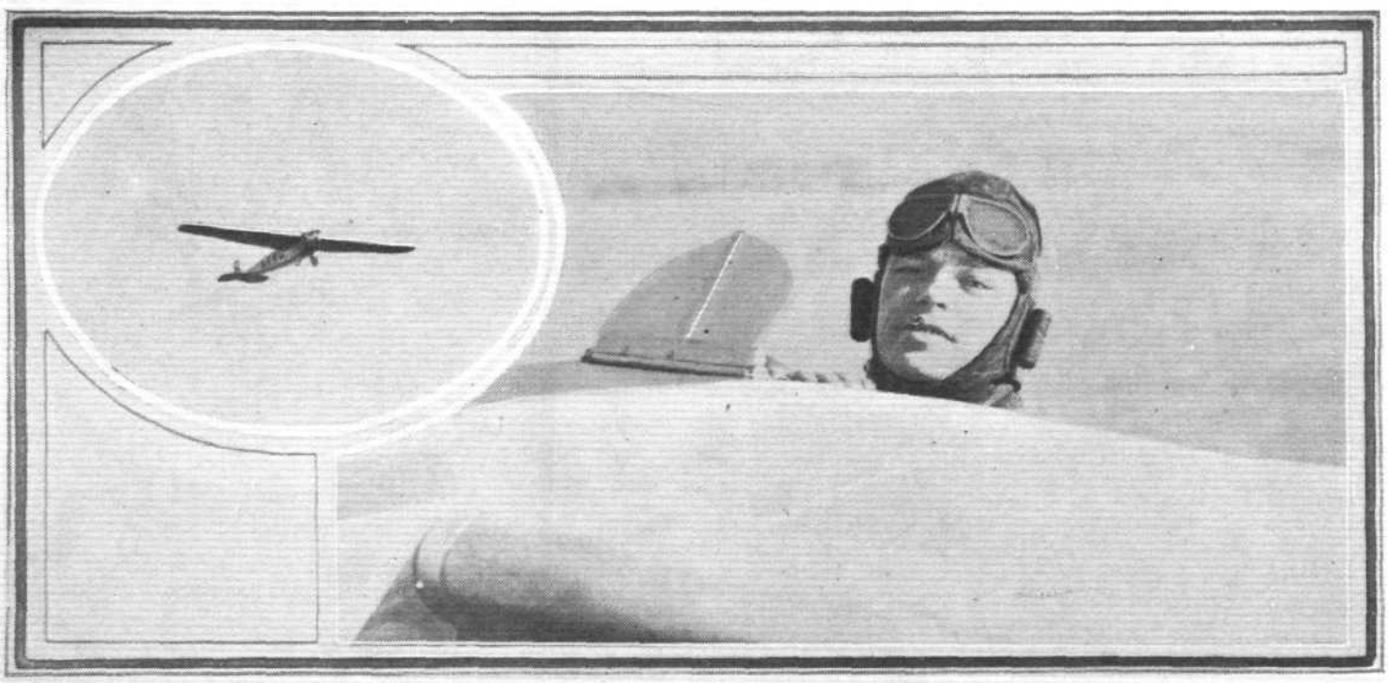
glider movement, although it is still flourishing in Germany and to a somewhat smaller extent in France.

From motorless aeroplanes to motor-driven machines with engines of low power was a short step, and one which would naturally occur to anyone having studied the problems of gliding and soaring flight and the aerodynamic efficiency of the gliders. Probably the first in modern times to produce an aeroplane of really low power was the French aircraft constructor, Dewoitine, who had already designed and built gliders, one of which took part in the Itford meeting. He produced a small monoplane fitted with a 9 h.p. Anzani motor cycle engine, and on this M. Barbot made a number of flights early in 1923. On May 6, 1923, Barbot flew from St. Inglevert to Lympne, returning to St. Inglevert later in the day, and winning by his double crossing of the Channel a prize of 25,000 francs offered by the French newspaper, *Le Matin*.

In the meantime, British designers had not been idle, and Mr. W. O. Manning, at that time chief designer to the aircraft section of the English Electric Co., produced a very light monoplane known as the "Wren," which was fitted with an A.B.C. motor cycle engine of only 400 c.c. capacity. This machine made a number of successful flights, piloted by Squadron Leader M. Wright, and proved conclusively that it was possible for a man to fly quite strongly with an engine of some 10 h.p.



Highest Speed in 1923 : The Parnall "Pixie II" with 750 c.c. Douglas, which put up an averaged speed of 76·1 m.p.h.



1,000 MILES IN A WEEK : During the 1923 Meeting Bert Hinkler flew 80 laps of the 12½ miles course on the Avro monoplane with 700 c.c. Blackburne Engine. He did not have a single forced landing.

THE 1924 WINNER : The Beardmore "Wee Bee," with Bristol "Cherub," which, piloted by Maurice Piercey, gained first prize.

At approximately the same time Mr. W. S. Shackleton, who was then chief designer to the Air Navigation and Engineering Co., of Addlestone, Surrey, designed a monoplane for the 20 h.p. Bristol "Cherub" engine which had just then been produced, but owing to certain delays in construction the machine was not finished for some considerable time, and Mr. Manning's "Wren" secured the honour of being the first modern British light 'plane to fly.

The First Lympne Meeting

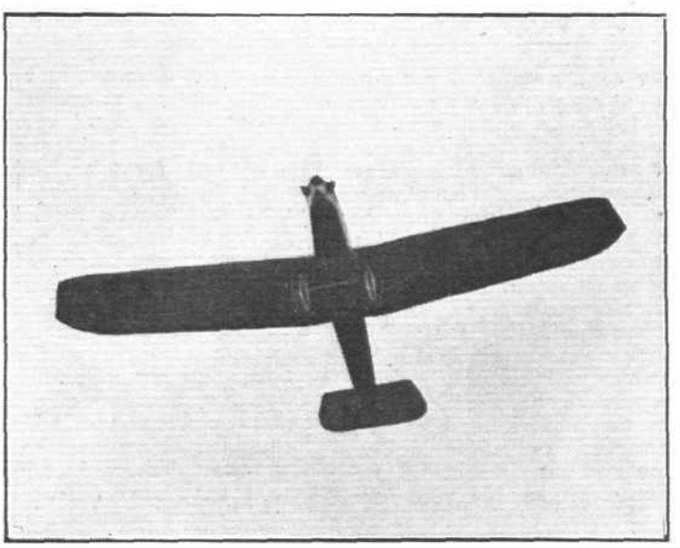
The next step in the evolution of the British light 'plane was the offer by His Grace the Duke of Sutherland of a prize of £500 for the machine covering the greatest distance on one gallon of petrol. To this offer was later added another of £1,000 by the proprietors of the *Daily Mail*, also for the greatest distance covered on one gallon of petrol, and other prizes were added by the Society of Motor Manufacturers and Traders and by Abdulla & Co., the former being for the greatest distance flown during the meeting, and the latter for the greatest speed attained by a light 'plane. The Royal Aero Club of Great Britain organised a meeting at Lympne aerodrome from October 8 to October 13, 1923, the course over which the competing machines had to fly being one of 12½ miles. For this competition it was stipulated that the engine capacity must not exceed 750 c.c., and in all 28 machines were entered.

In the first light 'plane competition, or, as it was then termed by the Royal Aero Club, "Motor-glider" competition, the English Electric Co.'s "Wren," fitted with 400 c.c. A.B.C. motor cycle engine, and the A.N.E.C. monoplane, fitted with 700 c.c. Blackburne motor cycle engine, tied for first place, both having flown a distance of 87·5 miles on a gallon of petrol. The prize for the greatest distance covered during the meeting was won by the Avro monoplane with 700 c.c. Blackburne engine, piloted by Bert Hinkler, who made no less than 80 laps of the 12½ miles' course, a total distance of 1,000 miles, flown in six days. The highest speed during the meeting was attained by the Parnall "Pixie II" with 750 c.c. Douglas engine, which, piloted by Captain Norman Macmillan, attained an average speed around the course of 76·1 m.p.h. The greatest altitude reached was 14,400 ft., this performance standing to the credit of the A.N.E.C. monoplane piloted by Maurice Piercey.

The general opinion after the first Lympne meeting was that, although some really extraordinary results had been obtained, motor cycle engines were not quite suitable for light 'plane work, at least not without considerable modification.

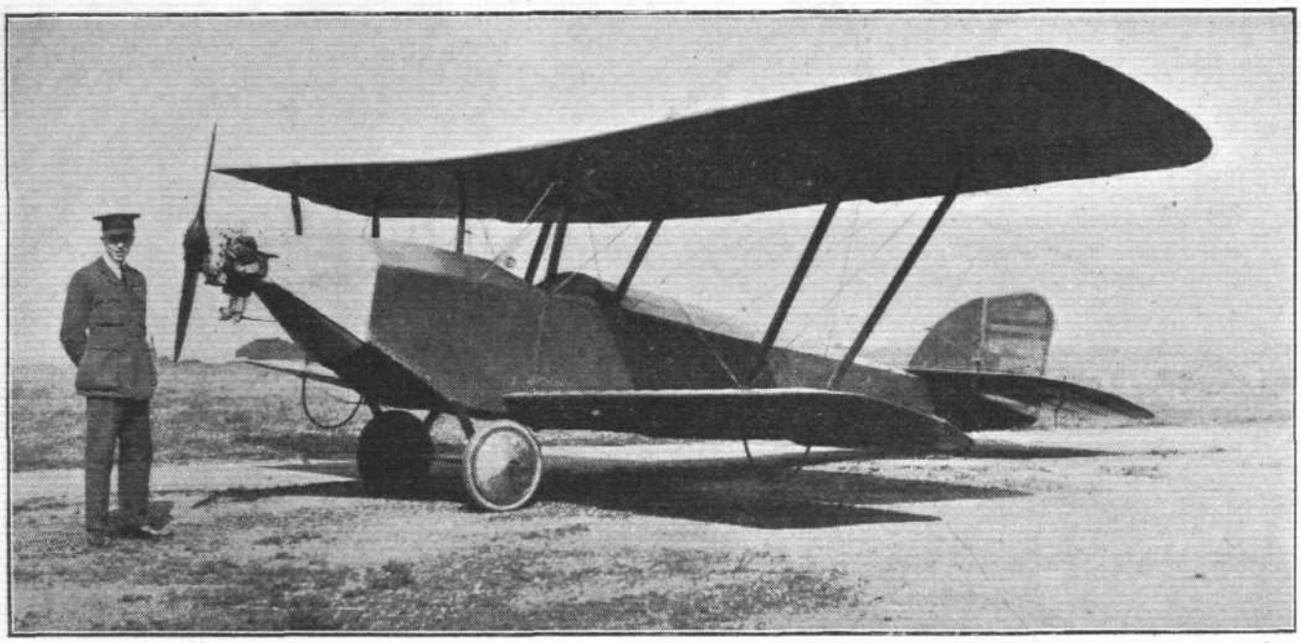
The Second Lympne Meeting

For the second Lympne light 'plane competition, which was held from September 29 to October 4, 1924, the British Air Ministry had offered prizes totalling £3,000, a stipulation being that the engine capacity was not to exceed 1,100 c.c., and that all machines should be two-seaters. The reason for this was that the Air Ministry desired to encourage the production of machines suitable for school work, for which purpose two-seaters with dual control were, of course, essential. To the Air Ministry's prizes were added others by the Duke of



The best get-off in 1924 was made by the Bristol "Brownie," with Bristol "Cherub" engine, piloted by Cyril Uwins.

The shortest pull-up in 1924 was scored by Longton on the Hawker "Cygnet," with Anzani engine.



GREATEST MILEAGE IN 1924 : 762·5 miles were flown by the Cranwell C.L.A. 2, piloted by Lieut. N. Comper, its designer. The engine fitted was a Bristol " Cherub."

Sutherland, the S.M.M.T., and others. Again the organisation was entrusted to the Royal Aero Club, and this time fuel consumption was not made the basis, but mainly speed range. The formula for the award of marks for speed range was $\frac{V_{max.} - V_{min.}}{V_{min.}} - 0{\cdot}333$, 8 marks being awarded for each per cent. over 33·3 per cent. speed range. In addition to speed range, marks were also awarded for distance to take off and distance to pull up. The additional prizes offered were for reliability, *i.e.*, for the greatest distance covered during the meeting. In all 19 machines were entered for the 1924 competition, and first place was secured (in the total award of marks) by the Beardmore " Wee Bee " with Bristol " Cherub " engine, piloted by Mr. Maurice Piercey, which put up an average top speed of 70·11 m.p.h., and had a slow speed of 39·66 m.p.h.

The best take-off was scored by Uwins, on the Bristol " Brownie," with Bristol " Cherub " engine, while the lowest slow speed was attained by Squadron-Leader Douglas on the Parnall " Pixie III " with Blackburne engine, whose low speed was only 37·22 m.p.h. The greatest number of marks in the pulling-up tests were scored by Squadron-Leader Longton on a Hawker " Cygnet," with Anzani engine, while the greatest time in the air and greatest distance covered were won by the Cranwell biplane, C.L.A. 2, with Bristol " Cherub " engine, piloted by Flight-Lieut. N. Comper, its designer. The Cranwell machine flew 762½ miles, and was in the air for 17 hours 53 mins. 18 secs. It is of interest to note that the winning " Wee Bee " covered 737½ miles in only 11 hours 54 mins. 41 secs., owing to its much higher speed.

After the 1924 Lympne meeting the general impression formed was that 1,100 c.c. was not quite sufficient capacity for two-seater machines, and there was a good deal of discussion as to whether, in the future, one should permit 1,500 c.c. or " go the whole hog " and allow 2,000 c.c. In the end the de Havilland Aircraft Company and A.D.C. Aircraft, Ltd., more or less solved the problem by producing the " Moth " aeroplane and the " Cirrus " engine respectively, this engine being of fairly large capacity but sturdy and reliable, and simple in upkeep.

The de Havilland " Moth " was produced not for any special competition, but as a machine which, in the opinion of its designers, would be likely to be of practical use for school work and for the private owner, and when later on the Air Ministry decided to subsidise the light aeroplane clubs, the " Moth " was the type chosen for the standard equipment of these clubs. Since then large numbers of " Moths " with " Cirrus " engines have been produced, both for British and Australian use, and for private owners.

In 1925 no competition for light 'planes was held, although a race meeting organised by the Royal Aero Club on August Bank Holiday was held at Lympne, at which a number of the 1924 machines took part, as well as one new machine, the Cranwell C.L.A. 3, a small single-seater monoplane with Bristol " Cherub " engine.

THIS YEAR'S LYMPNE MEETING

For the competition to be held at Lympne from September 10 to September 18 this year the basis is different from those of the two previous competitions, in that no special engine capacity is stipulated as a maximum, the figure used in place of engine capacity being engine weight, a maximum of 170 lbs. being permitted. Within this engine weight competitors are at liberty to do as they please. For the purpose of judging machines, the ratio of useful load carried to the weight of fuel consumed for the total distance is used, with the stipulation, however, that the useful load carried must be at least 340 lbs. In this figure is included the weight of pilot and passenger, but not of fuel. The competition will be flown over a series of circuits totalling 1,964 miles (3,160 kms.), and one of the stipulations is that the average speed must be at least 50 m.p.h.

Eliminating Trials

Before being admitted to the competition itself, machines must pass a series of eliminating trials. In these, competing machines will be required to pass a dismantling and erecting test in which machines must be presented fully erected and then be dismantled or folded in such a manner as to permit of their being completely transported in one journey over a distance of not more than 25 yards, and placed in a shed 10 ft. in width and 10 ft. in height. The machines must then be taken outside the shed and re-erected. Only two persons will be allowed to handle the aeroplane, and the time occupied must not exceed one hour. This test is known as *Test A*.

Test B.—This is intended as a demonstration of dual control, and will consist in two separate flights of not less than five minutes' duration each, within sight of the aerodrome, at the termination of each of which one figure-of-eight must be flown within the boundary of the aerodrome. The pilot must be alone in this test, and must occupy alternately the two seats so as to prove that the machine can be piloted from either cockpit.

Test C.—This is a getting-off test, which will consist in a take-off, starting from rest, and flying in a straight line over two barriers 25 ft. high and placed 25 yards apart. The distance from the starting point to the first barrier will be 300 yards. This distance is based on a wind not exceeding six miles per hour.

Test D is a pulling-up test, and will consist of a straight landing over a barrier 6 ft. high. The length of run after crossing the barrier must not exceed 125 yards. This distance is based on a wind not exceeding 6 m.p.h.

Eliminating tests C and D must be performed with the total

load which the machine is to carry throughout the competition, but in case of failure the load may be reduced until the machine passes the test, provided the useful load is not less than 340 lbs. The load with which the machine finally passes will then naturally be the load to be carried in the competition. Any number of attempts will be allowed.

The Actual Competition

In the actual competition, as already pointed out, the basis for the award of marks is the ratio of useful load carried to the weight of fuel consumed in covering the total distance of 1,964 miles. In this connection it may be of interest to examine the results obtained in the 1923 Lympne competition (in which mileage per gallon was the criterion). The best mileage obtained in that competition (by the "Wren" and A.N.E.C. machines) was 87·5 miles per gallon of fuel. No "useful load" was then stipulated, but one may, for the purpose of comparison, take the weight of the pilot as "useful load." Both James and Longton are small men, and we shall probably not be far wrong if we assume that each weighed 150 lbs. in flying kit. To obtain an idea of what this represented, in a convenient form, we will, therefore, assume a useful load of 150 lbs. The distance covered on 1 gallon of petrol was 87·5 miles, so that the "ton-miles per gallon" were $\frac{150 \times 87{\cdot}5}{2{,}240} = 5{\cdot}86$ ton-miles per gallon. Expressed in another way, we may say that this consumption represented $\frac{150 \times 87{\cdot}5}{2{,}240 \times 7.} = 1{,}875$ lb.-miles per lb. of petrol.

To obtain an idea of what sort of petrol consumptions and useful loads would have to be attained in this year's competition in order to equal the efficiency of the 1923 single-seaters with motor cycle engines, let it be assumed, at one end of the scale, that the useful load carried is the minimum stipulated, *i.e.*, 340 lbs. The distance to be flown is 1,964 miles, so that the weight of fuel for the distance would have to be $\frac{340 \times 1{,}964}{1{,}875} = 356$ lbs. Assuming petrol to weigh 7 lbs. per gallon, this would represent 50·85 gallons, and to obtain it the machine would have to do a mileage of 38·6 miles per gallon. It may, perhaps, be doubted whether such a mileage will be attained in the competition. The "Figure of Merit," or ratio of useful load to weight of fuel consumed would be $\frac{340}{356} = 0{\cdot}95$.

At the moment it is not known definitely what will be the greatest useful load to be carried for point-scoring purposes, as this may depend to a considerable extent upon whether some of the machines will be able to clear the 25 ft. barriers in 300 yards with the total loaded weight permitted by their airworthiness certificate. Let it be assumed, however, in order to examine what happens at the other end of the scale, that a machine carries a useful load of 750 lbs. with an engine of the maximum weight permitted of 170 lbs. To equal the single-seaters in economy it would have to consume $\frac{750 \times 1{,}964}{1{,}875} = 785$ lbs. of petrol, which, with petrol at 7 lbs. per gallon, would represent 112·2 gallons, or a mileage of 17·5 miles per gallon.

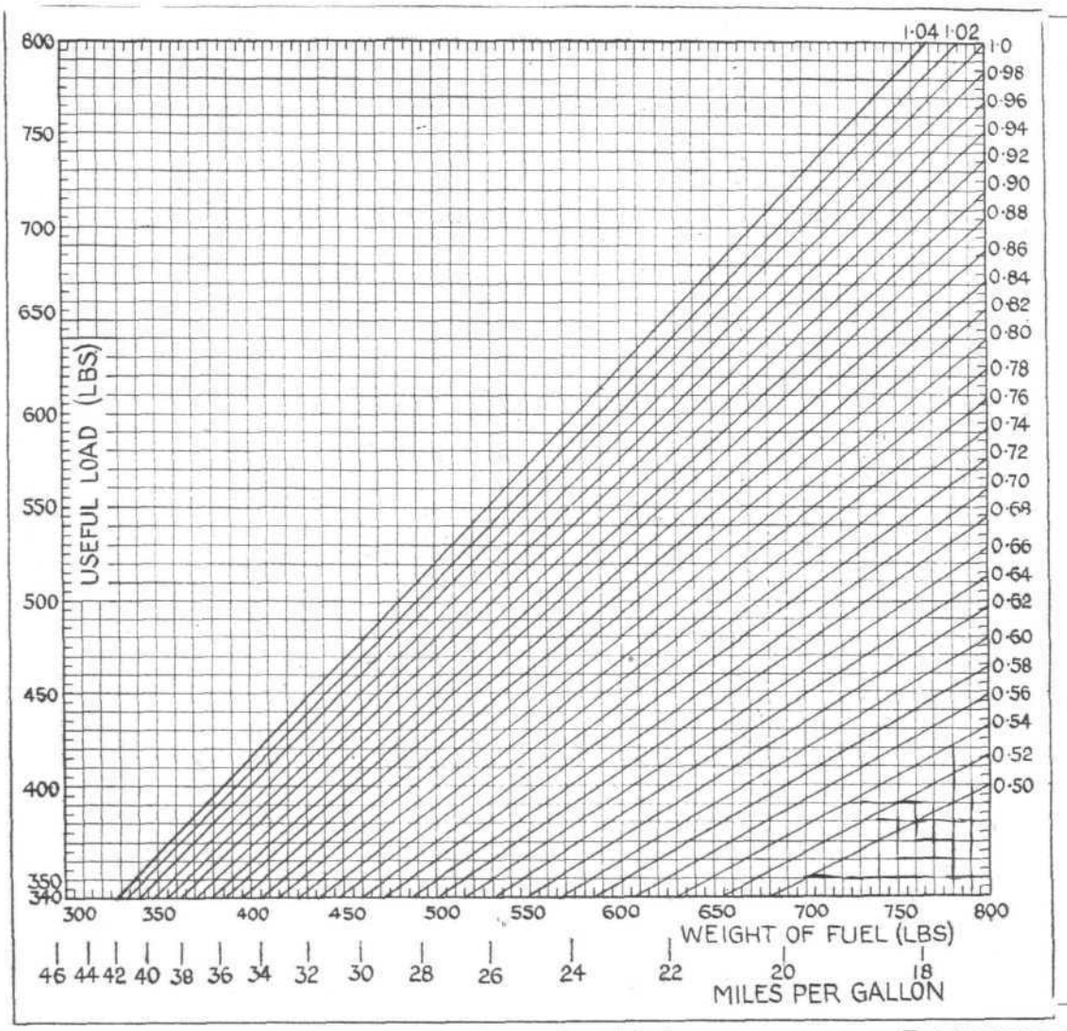


Chart showing "figures of merit" for various combinations of useful load and weight of fuel, as well as the mileages per gallon necessary to obtain these figures.

Programme of Events

The eliminating trials will be held at the Lympne aerodrome on Friday, September 10, and Saturday, September 11, but no fixed time table can be given, as competitors are allowed, and may wish, to make more than one attempt in the take-off and alighting tests of which details are given above. These two days, however, will be entirely devoted to eliminating tests, and all machines must have passed these tests by 8 p.m. on Saturday, September 11. Any machine which has not by then passed the tests will be debarred from taking part in the actual competition.

The first day of the competition proper will be Sunday, September 11, and competitors will be timed over the course any time between 8 a.m. and 8 p.m. These times will also apply on the following days, and it should be pointed out that the sheds in which the machines are housed will be locked between 9 p.m. and 7 a.m., competitors not being allowed access to their machines in that period, and all engine testing, repairs, &c., having to be carried out during the hours between 7 a.m. and 9 p.m.

First Day's Circuit (September 12)

The course for the first day's circuit is from Lympne aerodrome to Brighton and back, a distance of 106 miles,

which has to be covered three times, making a total for the day of 318 miles. The turning point at Brighton will be the grand stand on the race course, which competitors must pass in a left-hand curve, *i.e.*, leaving the turning point on their left. Alightings must be made at Lympne aerodrome on the completion of each circuit. Assuming that competing machines will be cruising at an average speed of 55 m.p.h., each circuit on the first day of the competition should occupy something like two hours, but the time will naturally vary somewhat with different machines, although for the flight to count in the competition the time occupied must not exceed 2 hours 7 minutes 12 seconds.

Second Day's Circuit (September 13).

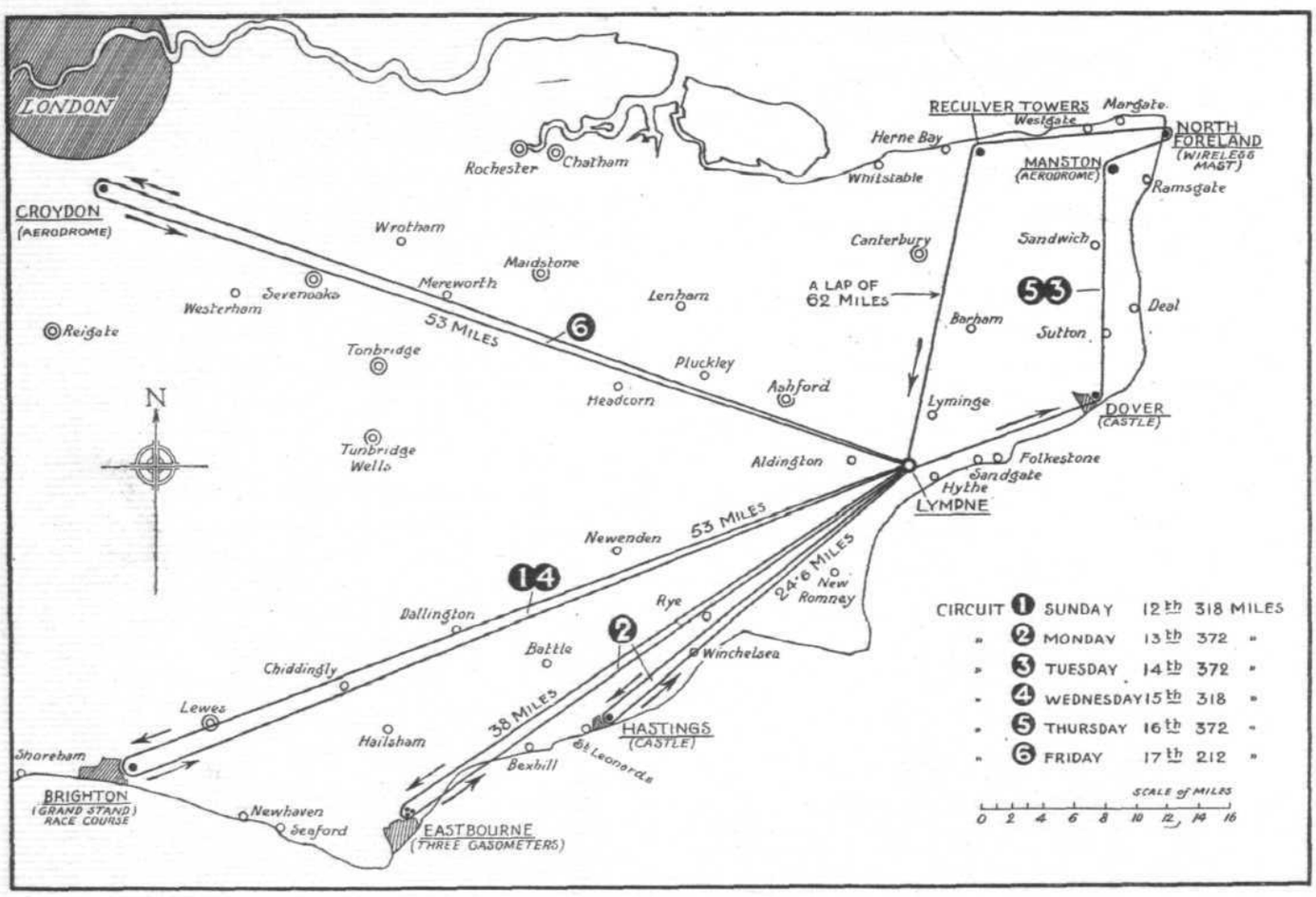
The circuit on the second day of the competition is from Lympne aerodrome to Eastbourne, back to Lympne, on to Hastings, and back to Lympne aerodrome. Machines do not alight on their return to Lympne from Eastbourne, but merely round the turning point on the aerodrome and head at A white circle on Manston aerodrome forms the turning point there, and this must be rounded clockwise, *i.e.*, competitors *leave it on their right*. At North Foreland the turning point is a wireless mast some 50 yards outside the lighthouse. This must be left on the left, and the aerial from the mast constitutes a possible source of danger, so that competitors are warned not to fly too low. The Reculver towers are rounded in an anti-clockwise direction, *i.e.*, machines leave them on their left, and then head South-South-West for Lympne.

Fourth Day's Circuit (September 15).

The course for the fourth day (September 15) is identical with that for the first day, and consists of three laps of the circuit Lympne-Brighton-Lympne, with alightings at Lympne on the completion of each circuit.

Fifth Day's Circuit (September 16).

This is the same as the third day's course, consisting in six laps of the course Lympne-Dover-Manston aerodrome-



THE LYMPNE LIGHT 'PLANE COMPETITION : Sketch map of the circuits over which the machines will fly.

once for Hastings. On the return from Hastings, however, alightings have to be made at Lympne, and the circuit Lympne-Eastbourne-Lympne-Hastings-Lympne, a distance of 124 miles, has to be covered three times, giving a total distance for the day of 372 miles. Each circuit of 124 miles must not occupy more than 2 hours 28 mins. 48 secs.

The turning point at Eastbourne is formed by three gasometers to the N.E. of the town, and competitors must round this, leaving it on their left. The Hastings turning point is Hastings Castle, situated a short distance inland and a short way to the east of the pier.

Third Day's Circuit (September 14).

The third day's circuit is from Lympne aerodrome to Dover, Manston aerodrome, North Foreland lighthouse, Reculvers and back to Lympne, a distance of 62 miles, which has to be covered six times, giving a total mileage for the day of 372 miles, and machines alighting at Lympne on the completion of each circuit. The time for one circuit must not exceed 1 hour 14 mins. 24 secs. The turning point at Dover is formed by Dover Castle, which competitors must leave on their left. North Foreland-Reculvers-Lympne, with alightings at Lympne on the completion of each circuit.

Sixth Day's Circuit (September 17).

On the last day of the competition proper, Friday, September 17, the course is from Lympne aerodrome to Croydon aerodrome and back to Lympne, a distance of 106 miles, with alightings at Lympne on the completion of each lap. This course has to be covered twice, giving a total distance for the day of 212 miles. The time taken to cover each lap must not exceed 2 hours 7 mins. 12 secs. In the accompanying sketch map are shown diagrammatically the various circuits, as well as some of the towns near which the different courses lie. It will be seen that the courses have been carefully planned to avoid the necessity of flying over any large towns, and even in the case of some of the turning points these have been so chosen that seaside visitors will see but little of the competing machines. From the point of view of the competitors possibly this is a wise precaution, but aviation as a whole will probably lose a very excellent opportunity for good propaganda by this planning of the circuits.

THE 1926 MACHINES

In the following pages we give brief descriptions of the machines entered for this year's light 'plane competition at Lympne. In most instances the machines taking part are those of 1924, which are already well known to our readers, and which, therefore, do not call for any detailed descriptions. In a few cases new machines have been built specially for this year's meeting, and out of these two have recently been described and illustrated in FLIGHT. These are the Avro "Avenger" and the Cranwell C.L.A. 4 (August 26 and September 2 respectively), a detailed description of which is not, therefore, deemed necessary. There still remain two or three new machines to be described in detail, however, these being the Farnborough "Sirocco," the Halton biplane, and the A.N.E.C. "Missel-Thrush." These are described in the following notes in their proper place, the machines being arranged according to their numbers in the competition.

In the following table we have compiled such information about the various machines as are thought to be of interest in connection with the competition. It is regretted that the table is not quite complete, but a few constructors have not come forward with the informtion required, for which we apologise, but for which also we can scarcely hold ourselves responsible.

No.	Entrant	Pilot	Type of Machine	Engine Type and Power	Wing Span	Wing Area	Weight Empty	Weight of Fuel and Oil	Useful Load	Total loaded Weight	Power Loading	Wing Loading
					Ft. In.	Sq. Ft.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs./ h.p.	Lbs./ sq. ft.
1	Blackburn Aeropl. Co.	Sq.-Ldr. Longton..	"Bluebird" Bi. ..	75 "Genet" ..	28 0	237	705	105	340	1,150	17·7	4·85
2	De Havilland Aircr. Co.	Capt. G. De Havilland and Capt. H. Broad	"Moth" Bi. ..	75 "Genet" ..	29 0	229	720	105	725	1,550	23·9	6·76
3	Bristol Aeropl. Co.	C. F. Uwins ..	"Brownie" Mono.	36 "Cherub" ..	37 4	180	610	46	340	996	31·1	5·52
4	R.A.E. Aero. Club	Flt.-Lt. Gray or F.O. Ragg	"Cygnet" Bi. ..	36 "Cherub" ..	28 0	165	—	—	—	—	—	—
5	R.A.E. Aero. Club	F.O. Mackenzie or F.O. Ragg	"Sirocco" Mono.	36 "Cherub" ..	—	—	—	—	—	—	—	—
6	Sopwith and Sigrist	P. W. S. Bulman..	"Cygnet II" Bi.	36 "Cherub" ..	28 0	165	364	48	360	772	24·1	4·67
7	Supermarine Avn. Works	Capt. Biard ..	"Sparrow II" Mono.	36 "Cherub" ..	34 0	192·5	505	61	434	1,000	31·2	5·2
8	Halton Aero. Club	Flt.-Lt. Halliday & Flt.-Lt. Trench	Halton Bi. ..	36 "Cherub" ..	28 6	195	480	60	340	880	27·5	4·5
9	A. V. Roe and Co.	B. Hinkler.. ..	"Avian" Bi. ..	75 "Genet" ..	32 0	294	660	105	835	1,600	24·7	5·45
10	A. V. Roe and Co.	Wg. Com. Douglas	"Avis" Bi. ..	35 "Thrush" ..	30 0	255	590	65	340	995	31·1	3·90
11	Cranwell Lt. Pl. Club	—	"C.L.A. 4" Bi. ..	65 "Pobjoy" ..	27 4	164		This machine has been scratched				
12	Cranwell Lt. Pl. Club	Flt.-Lt. Comper ..	"C.L.A. 4" Bi. ..	36 "Cherub" ..	27 4	164	480	54	340	874	27·3	5·32
13	H. W. Martin ..	Lt.-Col. Henderson	A.N.E.C. "Missel Thrush" Bi.	35 "Thrush" ..	28 0	210	500	50	340	890	27·8	4·24
14	George G. Parnall	F. T. Courtney ..	"Pixie III" Mono.	36 "Cherub" ..	32 5	137	—	—	—	—	—	—
15	Seven Aero. Club..	F.O. Boyes ..	Short "Satellite" Mono.	A.B.C. "Scorpion"	34 0	168	610	60	340	1,010	29·7	6·0
16	Seven Aero. Club	Flt.-Lt. Ritchie ..	Westland "Woodpigeon" Bi.	A.B.C. "Scorpion"	22 9	155	—	73	340	—	—	—

No. 1. The Blackburn "Bluebird"

Armstrong-Siddeley "Genet"

The Blackburn "Bluebird" is the original side-by-side biplane designed for the 1924 Lympne meeting, for which it was finished too late to take part, modified and strengthened up to take the Armstrong-Siddeley "Genet" engine. The mounting of the engine is, of course, new, but is of the same type as that used for the original Blackburne engine in the 1924 machine. Of other alterations mention may be made of a slight modification of the cockpits. Originally these were side by side, but they are now slightly staggered in order to give the seat width called for in the competition.

The wide fuselage is of mixed construction, that is to say the forward portion, from aft of the cockpits to the nose, is of partly tubular construction, while the rear portion is a normal box girder with four wood longerons and wire bracing. The

No. 1. THE BLACKBURN "BLUEBIRD": Side View.

covering of this portion is of fabric, while in front the covering is in the form of three-ply wood. The two portions of the fuselage can be readily detached from one another.

The biplane wings are of normal construction as regards their main spars and ribs, which are of wood, but the drag struts inside the wings are duralumin tubes, with steel wire drag bracing, while the inter-plane struts are also of duralumin. The wing section used is that known as T.64.

as a school machine has proved itself thoroughly reliable and robust, qualities of the very greatest value in school work, where machines often receive treatment of none too gentle a character. There is, however, a very great deal of difference between a machine designed for hard school work and one designed for some very special purpose, such as a competition.

Exactly how the de Havilland designers have done the trick we are not certain, but the figures given in the table

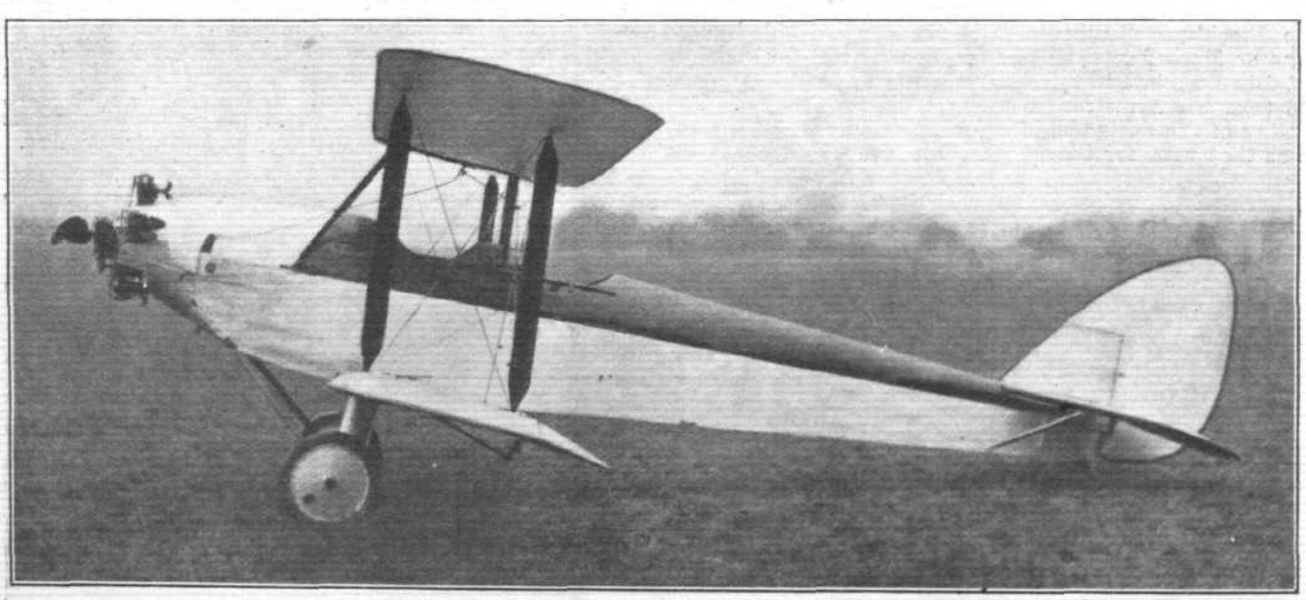
No. 2. THE DE HAVILLAND "MOTH": Three-quarter front view.

The undercarriage is of the simple V-type, with the front "legs" telescopic and containing rubber rings working in compression.

The Armstrong-Siddeley "Genet" engine is bolted to the fireproof bulkhead which closes the fuselage proper in front, and the petrol tank is mounted in the top centre-section so as to obtain direct gravity feed. The tank itself is of aluminium throughout, with welded joints, a form of construction giving very light weight. The oil tank is placed just ahead of the

indicate that the "Moth" as fitted with the "Genet" engine should stand a very good chance in the competition. The empty weight of the machine is 720 lbs. The weight of petrol and oil is 105 lbs. approximately (12 gallons of petrol and 2 gallons of oil). The point-scoring useful load is no less than 725 lbs., so that the machine has a ratio of empty weight to total loaded weight of 0·464.

In the earlier part of our Lympne supplement we referred to the efficiency of the 1923 light 'plane single-seaters, pointing



No. 2. THE DE HAVILLAND "MOTH": Side view.

fireproof bulkhead. The Blackburn "Bluebird" has an estimated top speed of 85 m.p.h., a cruising speed of 70 m.p.h., and a landing speed of 32 m.p.h.

No. 2. The De Havilland "Moth"

Armstrong-Whitworth "Genet"

The de Havilland "Moth" is already so well known to our readers as to make a detailed description of the machine quite unnecessary. It has been in use, in its original form as fitted with the A.D.C. Aircraft "Cirrus" engine, by the various light aeroplane clubs for well over a year, and in its capacity

out that the figure for "ton-miles per gallon" which they represented was 5·86.

The useful load is 725 lbs., and to obtain a mileage of 1,875 lb.-miles per lb. of fuel the consumption for the total distance of 1,964 miles would have to be $\frac{725 \times 1,964}{1,875} =$ 760 lbs. of petrol, or, taking petrol as weighing 7 lbs./gallon, 108·5 gallons. This would represent a mileage of $\frac{1,964}{108·5} =$ 18·1 miles per gallon. Such a mileage will not be easy to obtain, but we should hesitate to say that it is impossible.

No. 3. The Bristol "Brownie."

Bristol "Cherub" Engine.

This machine is, to all intents and purposes, identical with that which took part in the 1924 Lympne competition, in which the "Brownie" obtained second place in the general classification and first place in the take-off tests. The machine has a steel tube fuselage, and the wing framework is also of steel, with corrugated steel strip spars, so that except for the fabric covering it is of all-metal construction. Although a light 'plane, the "Brownie" is not a particularly small machine, having large wing area in order to obtain light wing loading. Among the modifications carried out for the present competition may be mentioned the substitution of a sprung undercarriage and the lowering of the line of thrust due to the fitting of a Series III Bristol "Cherub" engine, and the addition of a deck fairing.

No. 3. The "Bristol Brownie," with Bristol "Cherub" Engine: Side view. Note the addition of a deck fairing on top of fuselage.

No. 4. The Farnborough "Cygnet."

Bristol "Cherub" Engine.

This machine is practically identical with the Hawker "Cygnet" entered by Messrs. Sopwith and Sigrist, by whom, it may be recollected, it was presented some time ago to the Royal Aircraft Establishment Aero Club. It is thought that it may have a slightly lower weight than the Hawker "Cygnet" owing to the fact that the latter has been somewhat strengthened in order to carry a slightly greater useful load. No accurate figures are, however, available.

No. 5. The Farnborough "Sirocco."

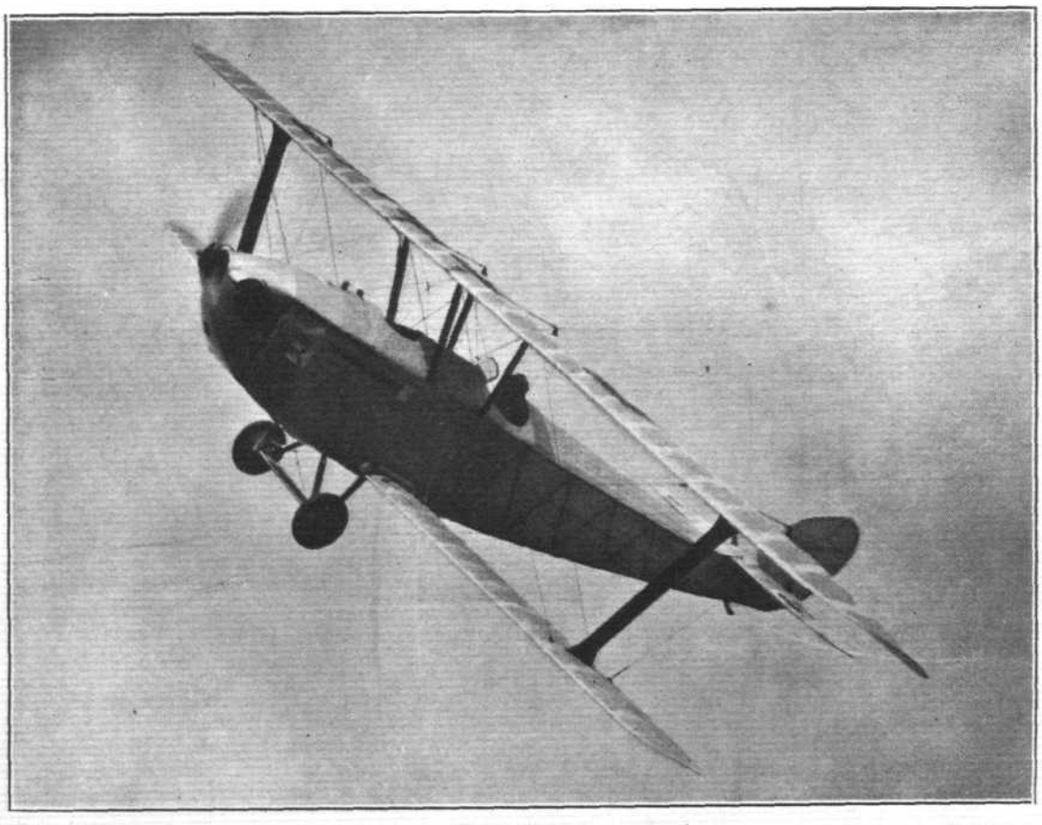
Bristol "Cherub" Engine.

This machine is one of the few of which we have been unable to obtain particulars. Application to the Secretary of the Club has failed to bring any reply, and at the moment we have no official information concerning this machine. It is, however, believed to be a monoplane, and is probably the logical development of the "Hurricane."

No. 6. The Hawker "Cygnet II."

Bristol "Cherub" Engine.

Designed in 1924 for the Lympne light 'plane competition of that year, and having won the International Handicap at the August Bank Holiday meeting of 1925 at Lympne, this machine is already familiar to our readers. It may be recollected that in the 1924 meeting it was the machine with the lowest structure weight, and that but for the failure of its engine on the last lap it might well have beaten the Beardmore "Wee Bee." That the "Cygnet" is a very efficient aeroplane, aerodynamically as well as structurally, cannot be doubted. This year it has been fitted with a Bristol "Cherub" Series III engine, and the structure has been strengthened in one or two places so as to obtain an airworthiness certificate for a somewhat greater total loaded weight. The reason for this is that it was desired to carry slightly more than the 340 lbs. useful load stipulated as a minimum. We believe that the C. of A. covers a total loaded weight of 840 lbs., but actually



When Old Mother Swan wasn't looking. No. 6, the Hawker "Cygnet" doing a bit of "stunting."

["FLIGHT" *Photograph.*

the useful load carried will probably be only 360 lbs., giving a loaded weight of 822 lb. Like many other competitors, the " Cygnet " is faced with the problem of clearing the 25 ft. barriers in 300 yards with full load, which may not be any very easy matter, and, in fact, may easily eliminate more than one competitor, or at any rate prevent them from flying in the competition with as great a useful load as is covered by the C. of A.

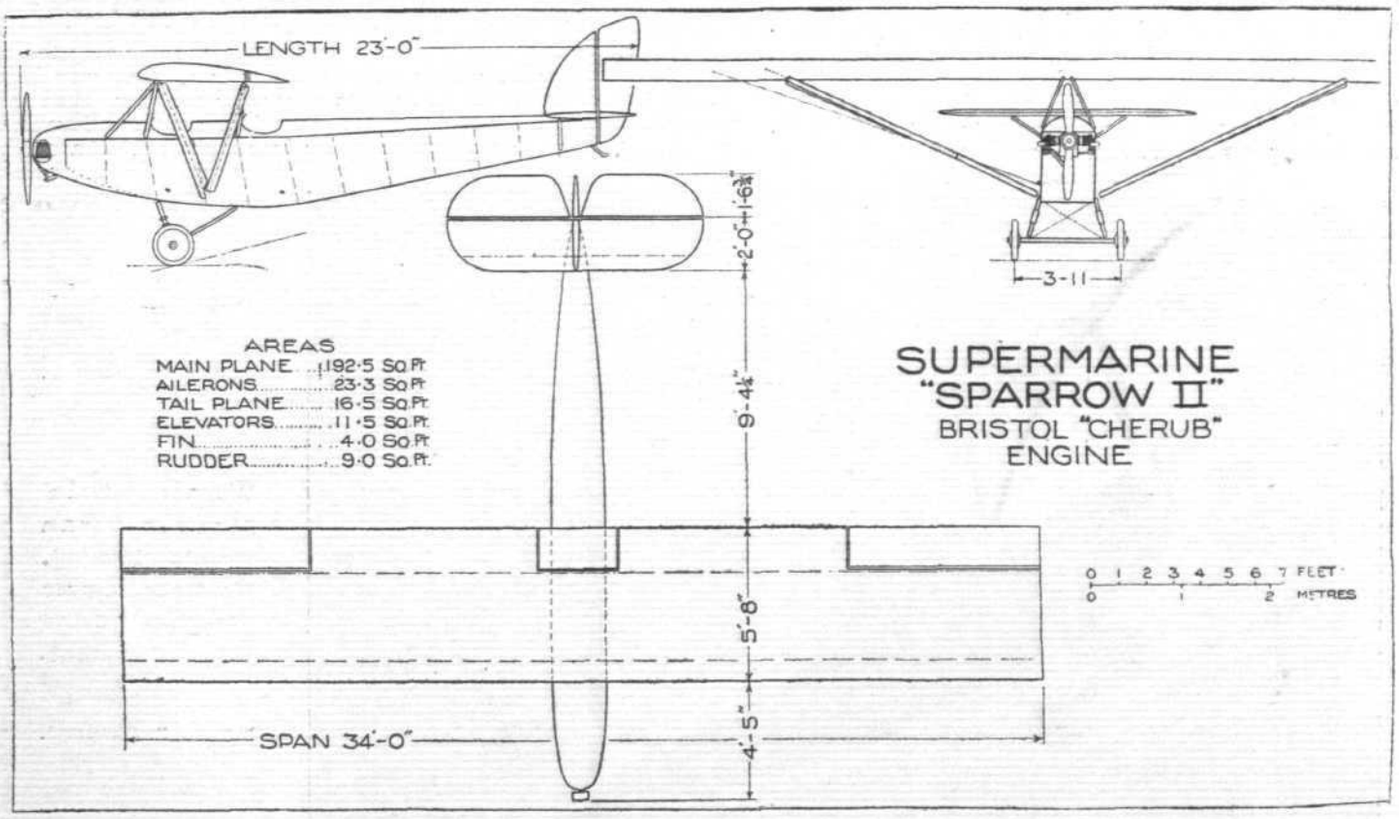
No. 7. THE SUPERMARINE " SPARROW II " : Three-quarter front view. Note the square wing tips.

No. 7. The Supermarine " Sparrow II."

Bristol " Cherub " Engine.

Although making use of the fuselage of the 1924 " Sparrow " biplane, the Supermarine " Sparrow II " is in reality an entirely new machine in that not only is it fitted with a different engine, the Bristol " Cherub," Series III, but the biplane *cellule* has been replaced by a " parasol " monoplane wing. The general arrangement of the machine is shown in the accompanying scale drawings and photograph, from which it will be seen that the monoplane wing is in one piece and without dihedral angle. The wing tips are of the " square " type, the section being permanent from centre to tips.

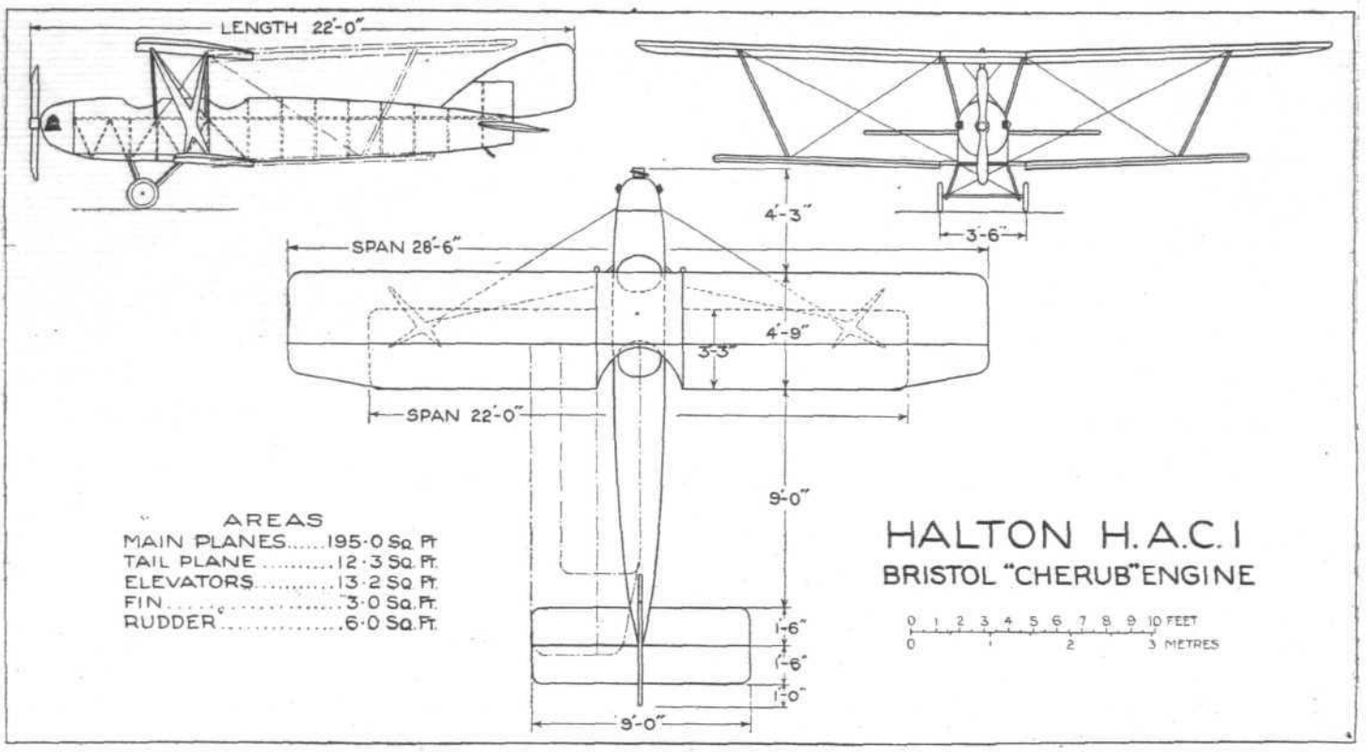
We gather that this type of wing was fitted not so much for the purpose of the Lympne competition as for experimental research work. Mr. R J. Mitchell, the Supermarine designer, desired to carry out full-scale experiments on scale-effect, and the wing was placed in this position, about 2 ft. above the fuselage, in order to obtain an unbroken wing of aspect ratio 6 and of Clarke " Y " section. For the dismantling and erecting test it will, presumably, be necessary to remove the wing and place it on top of the fuselage, but this it should be possible to do well within the time limit set for these operations. Quite apart from what sort of performance it puts up in the competition, considerable interest will attach to the " Sparrow II " on account of this use of it for real research purposes, and it will be interesting to see what scale effect on the particular section is found as compared with the results of wind tunnel tests. If the arrangement well above the fuselage is found to give accurate results, and not to make allowance for slip



No. 7, THE SUPERMARINE " SPARROW II " : General Arrangement Drawings, to Scale.

stream effect too difficult, there would seem to be a considerable future for testing wing sections on full scale in this manner at relatively low cost.

As regards the wing structure, this is of normal construction, with two main spars, ribs and ailerons. The latter are hinged direct to the rear main spar. In the centre the wing rests on a



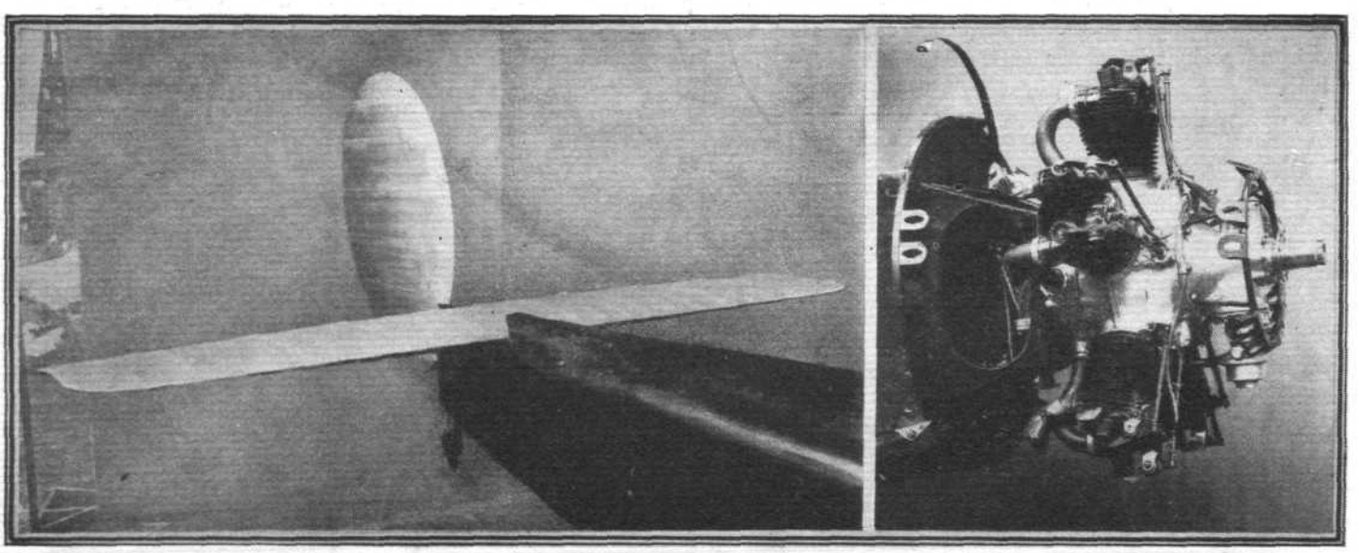
No. 8. THE HALTON H.A.C. 1 "MAYFLY": General Arrangement Drawings, to Scale.

cabane of steel tube struts, while the outboard bracing is in the form of a pair of Vee struts on each side. These struts are steel tubes with wood fairings.

No. 8. The Halton H.A.C. 1 "Mayfly"
Bristol "Cherub" Engine

IN some ways the Halton Aero Club is unique. Formed in December, 1925, as a service club among the staff and apprentices at Halton, the chief training centre for apprentices in the Royal Air Force, the club already has a membership of more than 1,100, and the funds of the club have been raised by 5*s.* and 2*s.* 6*d.* shares. The apprentices alone have raised in this way £170. The club was formed with the object of increasing the interest of both the staff and the boys in their work by designing and building machines of their own and entering them in such competitions as may occur. At the same time it was hoped that the carrying out of this work from the first ideas to the finished aeroplane might help to improve the liaison between the various branches of the staff. When the first machine has been completed it is intended to arrange for a series of lectures to be given to the apprentices by those responsible for the various branches of the design and construction.

The H.A.C. 1, or "Mayfly," as it has been somewhat facetiously called by the apprentices, is the club's first effort. It has been designed by the school educational staff, and built in the workshops largely by the apprentices under the supervision, and with the assistance, of their officers, N.C.O's. and civilian instructors. Some of the work has been carried out as part of the regular training of the apprentices, but the majority has been voluntary spare time work on the part of all concerned, and one wishes the club every success in the future. It is obviously tackling the job in the right spirit. It is, therefore, all the more to be regretted that as far as



MAKING BOTH ENDS MEET: The Tail and the Engine Mounting of No. 9, the Avro "Avian." The engine is an Armstrong-Siddeley "Genet."

No. 9. THE AVRO "AVIAN": Three-quarter front view.

an be seen at the moment the machine is unlikely to be inished in time for the Lympne meeting.

But few particulars relating to the construction of the I.A.C. 1 are available, but the general arrangement drawings how the machine to be a biplane with "X" interplane truts and a total wing area of 195 square feet. The weight f the machine empty is 480 lbs., and the weight of fuel and il is 60 lbs., while the useful load is 340 lbs., giving a total oaded weight of 880 lbs. and a wing loading of 4·5 lbs. per q. ft. The estimated top speed is 76 m.p.h., and the landing peed 38 m.p.h. The wing section used is R.A.F.15. The ngine is a Bristol "Cherub," which drives a Fairey-Reed Duralumin propeller.

No. 9. The Avro "Avian"

Armstrong-Siddeley "Genet"

In many ways this machine may be said to be the most interesting of those taking part in the forthcoming Lympne meeting. It is an entirely new design, and is remarkable or its extraordinarily low empty weight and its high useful oad. The former is, approximately, 680 lbs., while the total oaded weight under the certificate of airworthiness is 1,550 lbs. Whether the machine will be loaded up to its full permissible veight at Lympne is not quite certain. A machine in which he useful weight is 60 per cent. of the gross weight, or in other words, the load 1·4 times the weight of the machine bare, is something very much out of the ordinary, and there can be little doubt that the "Avian" will prove a formidable opponent in the competition. Concerning the machine itself, this was described and illustrated in FLIGHT on August 26, 1926, and it will suffice if we recall that it is chiefly remarkable for its very large wings, the total area being no less than 294 sq. ft. The total wing span is 32 ft., in spite of which, however, but a single pair of interplane struts is used on each side, the long, unsupported span being made possible by using a fairly thick wing section. In the Grosvenor Cup race after the competition the "Avian" will probably be fitted with a single wing, turning it into a low-wing monoplane, with a single strut bracing each side.

No. 10. The Avro "Avis"

Blackburne "Thrush" Engine

This machine was designed and built for the 1924 light 'plane competition, when it was fitted with a Bristol "Cherub" engine. With this engine the "Avis" also took part in the meeting held at Lympne in August of last year. The machine is thus not a new one, and is probably regarded more as a "second string" to the "Avian." It is a biplane of somewhat typical Avro lines, but its performance is slightly handicapped by a fairly high structure weight. For this

No. 10. THE AVRO "AVIS": Three-quarter front view.

No. 12. THE CRANWELL C.L.A. 4 : Front view. Note the short top plane

year's competition the " Avis " has been fitted with one of the new Blackburne " Thrush " radial air-cooled engines. In this connection it is of interest to note that for the 1924 meeting two machines had been entered, one of them fitted with the earlier Blackburne radial (the " Badger "). It will thus be interesting to see how the machine performs with the latest Blackburne.

No. 11. The Cranwell C.L.A. 4

Pobjoy Engine

One of the minor tragedies in connection with the 1926 Lympne meeting has been the mishap to the Pobjoy engine which was to have been fitted in one of the two Cranwell biplanes entered. This engine, which develops a maximum of 65 b.h.p. for a weight of only 100 lbs., was being type tested at Farnborough when a certain part broke. The breakage was in itself quite a trivial affair, and should not be in any way due to the very high power-weight ratio of this engine. It was, however, sufficient to prevent the engine from passing its type tests in time for the competition, and, consequently, the machine in which it was to have been fitted has had to be scratched. This is all the more regrettable as there is every reason to believe that with the Pobjoy engine the C.L.A. 4 would have been in a position to obtain a very high ratio of useful load to fuel consumed. The engine is very economical, and the fact that it is of the geared type should have enabled the machine to do the get-off test quite easily, owing to the good propeller efficiency that might have been counted upon.

No. 12. The Cranwell C.L.A. 4

Bristol " Cherub " Engine

The second Cranwell machine, identical with No. 11, except for its engine, entered by the Cranwell Light Aeroplane Club, was described and illustrated in FLIGHT last week, and there is thus no need to give a detailed reference to it here. Suffice it to point out that the machine is chiefly remarkable for the fact that its top plane is of smaller span and chord than those of the bottom plane, a biplane arrangement not usually seen on British machines, although fairly frequently on Italian biplanes. The reasons for the arrangement, in the case of the Cranwell machine, are that it gives a good view from both cockpits while structurally it is advantageous on account of the shorter free length of top spar which it gives.

The C.L.A. 4 was designed by Flight-Lieut. N. Comper, and built by members of the Cranwell Light Aeroplane Club. It will be piloted in the competition by its designer, and all wish this plucky amateur effort every success. The transference of the Boys' Wing from Cranwell to Halton may seriously affect the future of the club, and we understand that Lieut. Comper is being transferred to the Felixstowe air station. Perhaps, however, one may hope for an amalgamation of the Cranwell and Halton clubs.

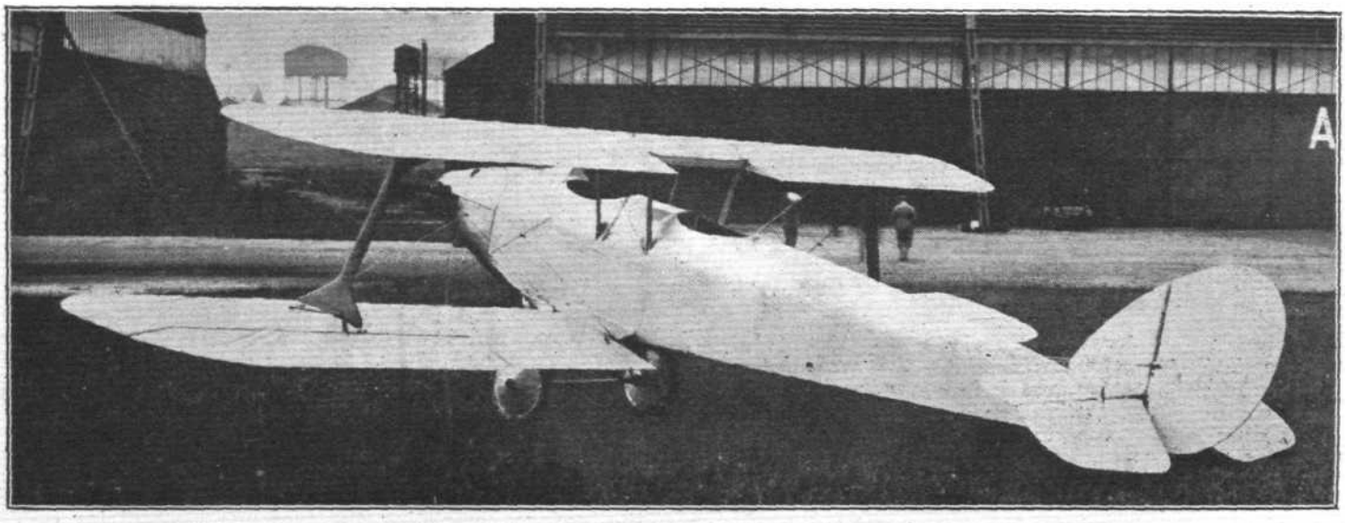
No. 13. The A.N.E.C. IV " Missel Thrush "

35-h.p Blackburne " Thrush "

In the A.N.E.C. IV " Missel Thrush " entered for the Lympne competitions, the Air Navigation and Engineering Co, Ltd., of Addlestone, Surrey, have produced an entirely new type of light 'plane. In previous A.N.E.C. light planes high efficiency was aimed at above everything, but in this new model the constructors have seriously considered not only the question of high efficiency, but also—and to a considerable extent—the comfort of the pilot and the passenger for long flights. In short, it is an attempt to produce a machine suitable for the private owner which will be at the same time efficient, comfortable, safe and cheap.

The " Missel Thrush " embodies, of course, all the features called for by the rules of the competition, such as dual control, folding wings, etc., but nevertheless the aim has been to produce something more than a competition machine. The engine fitted in the " Missel Thrush " is, appropriately enough, the Blackburne " Thrush," a 3-cyl. air-cooled radial of 1,500 c.c., weighing 132 lbs. complete, and developing 35 h.p. at 2,500 r.p.m.—allowing a very good cruising speed at 2,000 r.p.m. ; the airscrew is driven direct.

Fitted with a 6-gallon petrol tank, the range of action of



No. 12. THE CRANWELL C.L.A. 4 : Three-quarter rear view.

this machine should be in the neighbourhood of 200 miles, the estimated top speed being 80 m.p.h. and the cruising speed 60 m.p.h. Its weight empty comes out at 500 lbs., while the overall dimensions are not too large for easy handling when on the ground—span 28 ft., length 21 ft. 6 ins., and height 8 ft.; the total wing area is 210 sq. ft.

The "Missel Thrush" is a 2-seater tractor fuselage biplane, with single I interplane struts, and is, as may be seen from the accompanying illustrations, an exceptionally pretty and well-proportioned machine. While, generally speaking, the construction of the "Missel Thrush" is a perfectly straightforward job, following orthodox practice, and in consequence permitting one of the main aims of the constructors being accomplished—viz., cheap and quantity production—its detail design is not lacking in original "brain waves." Great simplicity is the keynote everywhere, and—to lapse somewhat into Irish—even one or two of the "complicated" fittings are conspicuous for their simplicity!

Furthermore, this simplicity has not by any means been achieved by sacrificing strength—and this applies also in respect to the light weight obtaining throughout this machine, another outstanding feature of the "Missel Thrush."

We were fortunate to be able to inspect the "Missel Thrush" during its construction, and were thus able to obtain some idea as to the workmanship being put in. In this respect we were very favourably impressed indeed, for we have no hesitation in saying that this was of the best we have seen, even in larger and more expensive machines. The material employed throughout is, we are assured, of the best quality.

No. 13. A.N.E.C. IV "Missel Thrush": Three-quarter front view.

Constructional Features

Turning now to the actual construction of the "Missel Thrush," pressure on our space will not allow us to deal as fully with every detail as we should like, and we can only, at the present moment, describe briefly some of the more noteworthy features. It should be mentioned that the designer, Mr. J. Bewsher, has paid considerable attention to the matter of streamlining and thoroughly "cleaning up" the machine everywhere externally, with the result that it is exceptionally free from all resistance-offering projections, and, wherever possible, corners, etc., have been neatly faired. On this point alone the "Missel Thrush" should make good in the matter of efficiency.

The Fuselage

The fuselage undoubtedly forms the most interesting feature of the machine, and is in every way a remarkably neat piece of work. It is of good streamline form, and has been ingeniously adopted to meet the particular requirements at various points—engine section, cockpits, and tail attachment—without interfering with this streamline form.

It is practically of monocoque construction, being built up of plywood on a light but strong skeleton framework. The latter consists of four main longitudinals and a series of transverse bulkheads comprising vertical and cross—and, in some cases, diagonal—struts reinforced with plywood.

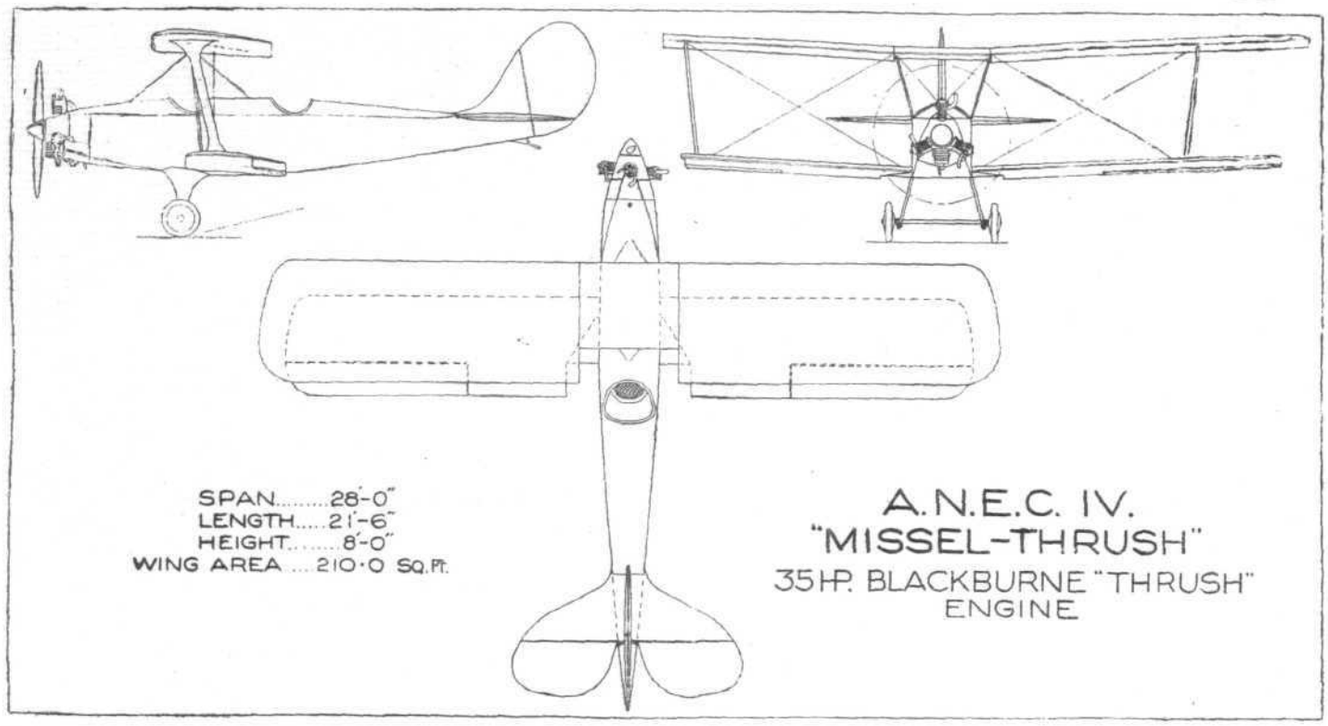
The cross-section of the fuselage is somewhat unusual; at the nose it is approximately triangular (apex up)—or, perhaps, a pentagon changing into a triangle, would describe it more accurately—after which, in the vicinity of the two cockpits, it is rectangular, and then it merges into triangular again, this time apex down, at the stern. In this way the fuselage is made, first, to accommodate itself to the best possible advantage to the shape of the engine—which is an inverted Y; secondly, to afford ample room for pilot and passenger; and thirdly, to provide a suitable support for the tail plane. It must be admitted that all three requirements are carried out by this arrangement most efficiently. As will be seen from the illustrations, the mounting of the engine is both neat and efficient on account of this method.

As previously stated, the two cockpits are exceptionally roomy—which is not always the case in machines of this type—and also well appointed. One cockpit is located at the trailing edge of the main planes and the other comes midway between them. The space in between the two cockpits is utilised for "cargo," and it should be noted that this is of ample proportions, in fact a medium sized suit case, etc., may easily be stored here. Space is also provided for carrying other smaller articles, such as tools, spares, and maps.

Both cockpits are provided with controls, of the stick and rudder bar variety. The control gear is a simple but effective affair, consisting of a sliding fore and aft shaft carried on the lower fuselage cross members—including the tubular wing-spar continuation members—between front and rear cockpits. Each joy-stick is universally jointed on this shaft, and is pivoted in a fork mounted on the shaft. The rear end of the shaft is connected to one arm of a double crank, from which the elevator control cables are taken. Thus a fore and aft movement of the stick causes the shaft to slide longitudinally, and so actuate the elevators via the crank, whilst a lateral movement of the stick operates the ailerons through cables attached to lugs on the upper ends of the fork (at stick pivot), passing, over pulleys, through the sides of the fuselage and through the lower wings. The rudder is operated in the usual way by a foot bar.

The mounting of the engine in the fuselage is another unusual feature, this being by means of a system of triangulated tierods which radiate out from engine plate (on fuselage) to crankcase, and not, as is more general, from engine to fuselage. It is claimed that by thus making each group, or triangle, of tierods converge on the engine plate, a better triangulation of the forces is obtained.

Behind the engine plate, which is of the fire-proof variety, is located the petrol tank. A neat metal cowling, enclosing the engine all but the cylinder heads, follows the contour of the fuselage, completing the thorough streamlining of the latter.

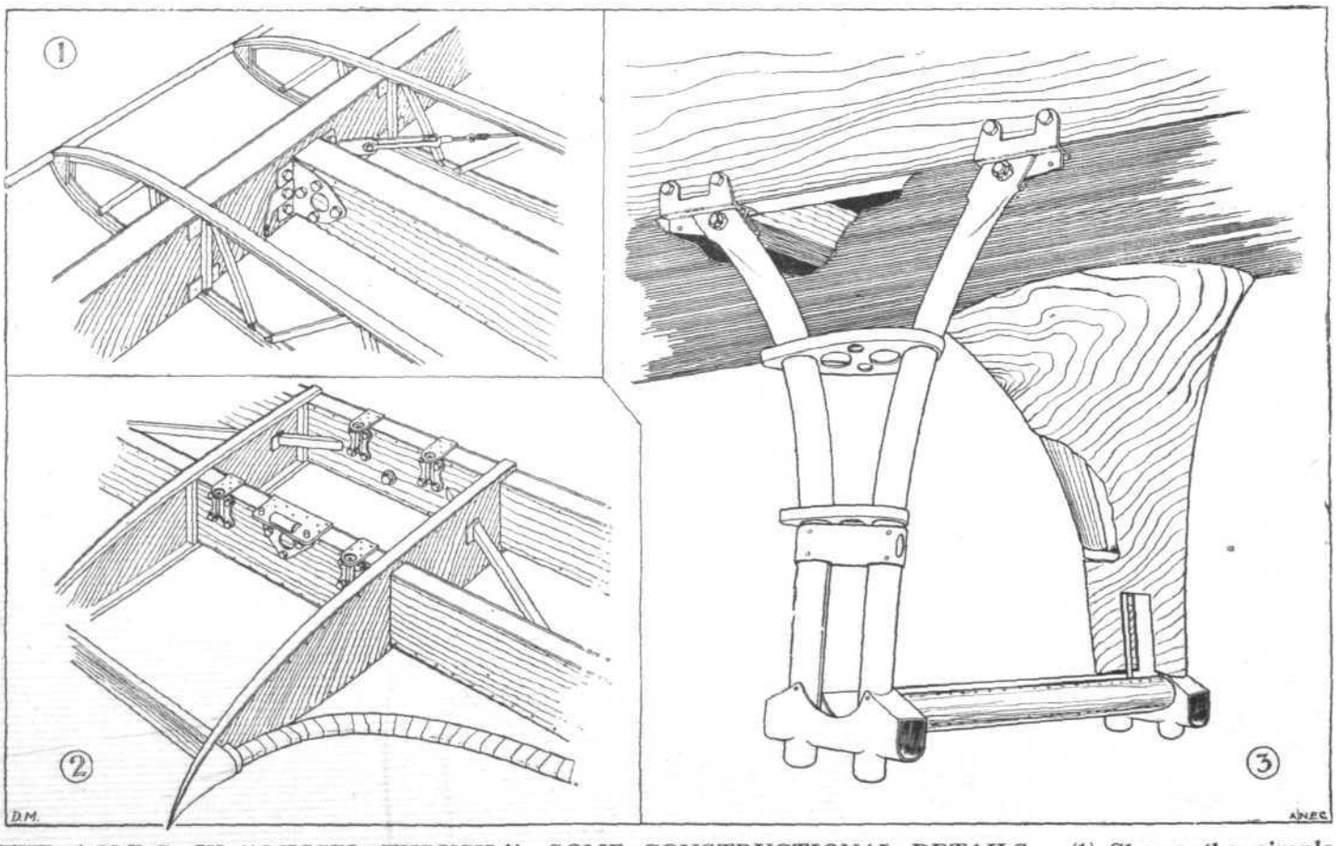


A.N.E.C. IV "MISSEL THRUSH": General arrangement drawings.

The Wings

The upper and lower planes are set at a fairly pronounced dihedral angle, but are not swept back. The upper plane is slightly larger in span and chord than the lower one, and is also staggered forward. Ailerons are fitted to the lower planes only. As stated previously, the wings are made to fold back along the fuselage. This operation is easily carried out, and in such a manner that the process of folding does not interfere with the setting of the aileron control, nor the wing bracing.

The wings are hinged at the rear spars, and when folded lie snugly along the fuselage, free of all obstructions. The lower planes are mounted on short wing roots built into the fuselage, the front spar attachment being made direct to the fuselage—the wing roots, of course, being triangular. Attachment of the upper planes is to a centre section, mounted



THE A.N.E.C. IV "MISSEL THRUSH." SOME CONSTRUCTIONAL DETAILS:—(1) Shows the simple wing construction at the interplane strut-compression member section; the leading edge is an aluminium tube, while the spar is of the box type, spruce and plywood. (2) Is the centre of the tail plane, which "sits" on the flat upper surface of the fuselage, and is held down by four long bolts passing from the latter through the fittings on the tail spars. Note, on the rear spar, the neat roller for the control cables. (3) The chassis struts, comprising steel tubes, forming a curved Vee, and connected at the ends by a streamline "trough" carrying the axle, are faired as shown by plywood.

above the fuselage by two half-I struts, braced by cables running from the top of each strut to a point on the top centre of the fuselage both fore and aft.

As regards the wing construction, this follows orthodox practice—somewhat similar to the A.N.E.C. II monoplane—comprising two box spars of spruce flanges and plywood walls, with lattice type ribs. All the fittings are of simple flat metal plate type, as may be seen in our sketch of the wing construction. The leading edge is formed by an aluminium tube, except at the tips of the lower plane, where steel tube is employed. From the leading edge to the front spar thin plywood covering is used, while the rest of the wing is covered with fabric.

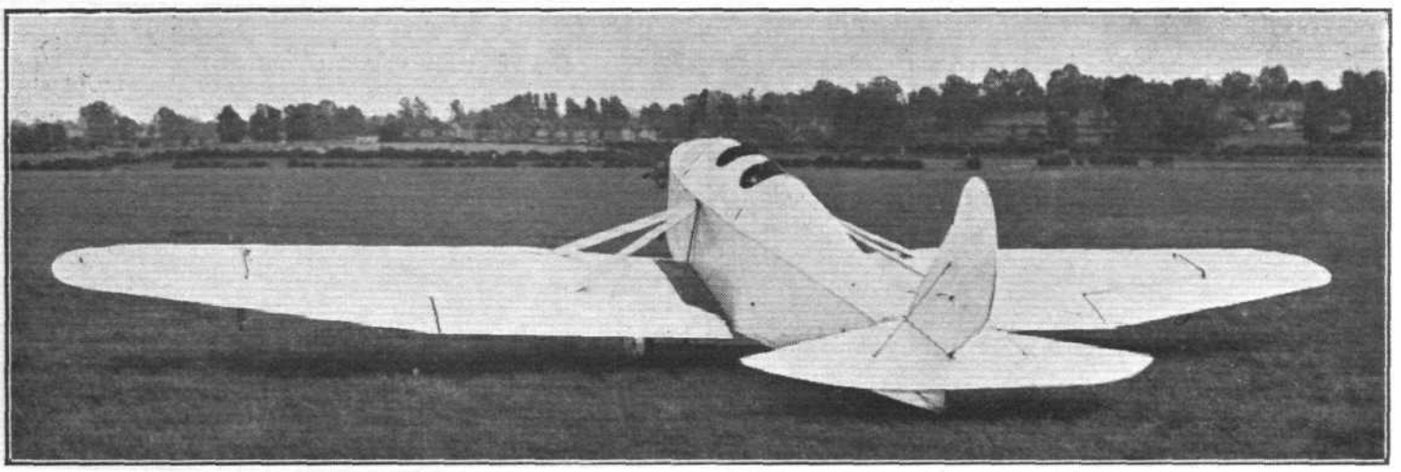
The interplane struts are of wood construction, being built up of laminations to streamline section. These struts are attached to the wings by simple metal U-plates—at each fore-and-aft extremity of the strut—which pass round the wing compression member at this point. The external wing bracing is taken from the centre of the strut-extremities, the lift wires being doubled and anchored to the front spar wing fitting.

The tail surfaces are of simple wood construction, fabric covered, and comprise a fixed one-piece horizontal stabilising surface, a triangular vertical fin, unbalanced divided elevators and rudder. All are of ample proportions, and an unusual feature consists of the rake forward of the hinge-line of the rudder, which may be seen on referring to our illustrations.

Both vertical and horizontal surfaces are unbraced externally, the latter being mounted direct on the top of the fuselage, which, as previously mentioned, presents an ample bearing surface at this point. It is attached by means of four long bolts, which pass up through the fuselage and through sockets mounted on the front and rear spars of the tail plane. This method of attachment—which is extremely positive—is clearly shown in one of our sketches. The fin is mounted on top of the tail plane, being attached to lugs on the spar of the latter, and to the stern post of the fuselage.

Undercarriage

Whilst the undercarriage of the "Missel Thrush" is of the V-type, its design and construction form another feature of this machine. The chassis struts consist of a pair of steel tubes bent to form a narrow, curved V. Their upper extremities are attached to brackets on the lower longerons of the fuselage, while the lower ends are joined by a metal "axle-box." In between the tubes are connected by flanged plates of streamline planform, and near the bottom by a metal distance block. Each complete strut unit is then faired with plywood covering, forming neat "peg-top trousers," as shown in our sketch. The lower extremities of each "leg" are connected by a wood cross strut, of streamline section, in the form of a trough, in which the main axle lies. The axle passes out between the tubes of the "legs," and is secured in place by rubber cord, which is wrapped round the "axle box" previously mentioned. The chassis struts are, of course, cross braced with cable.

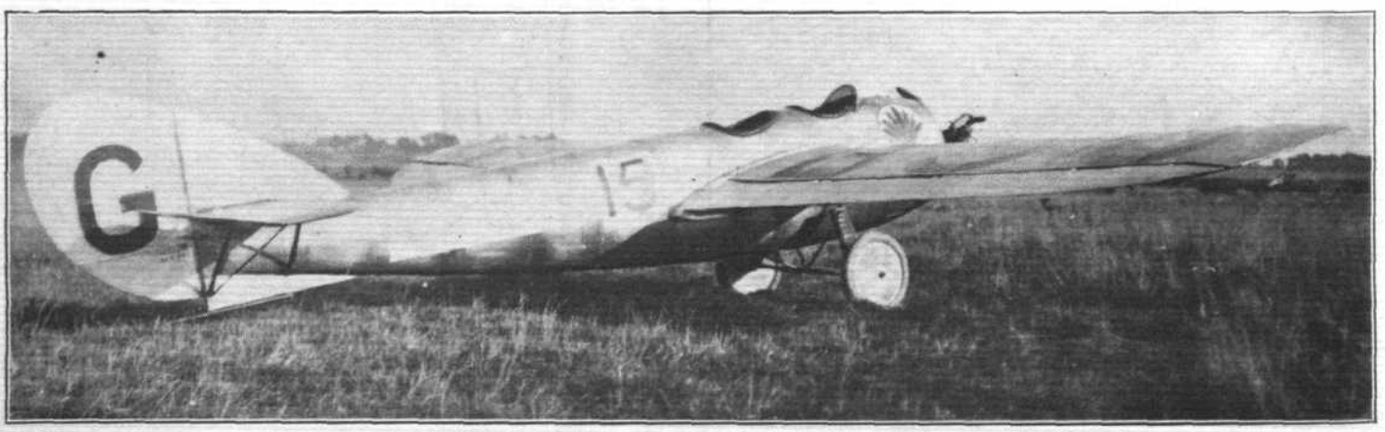


No. 14. THE PARNALL "PIXIE III": Three-quarter rear view.

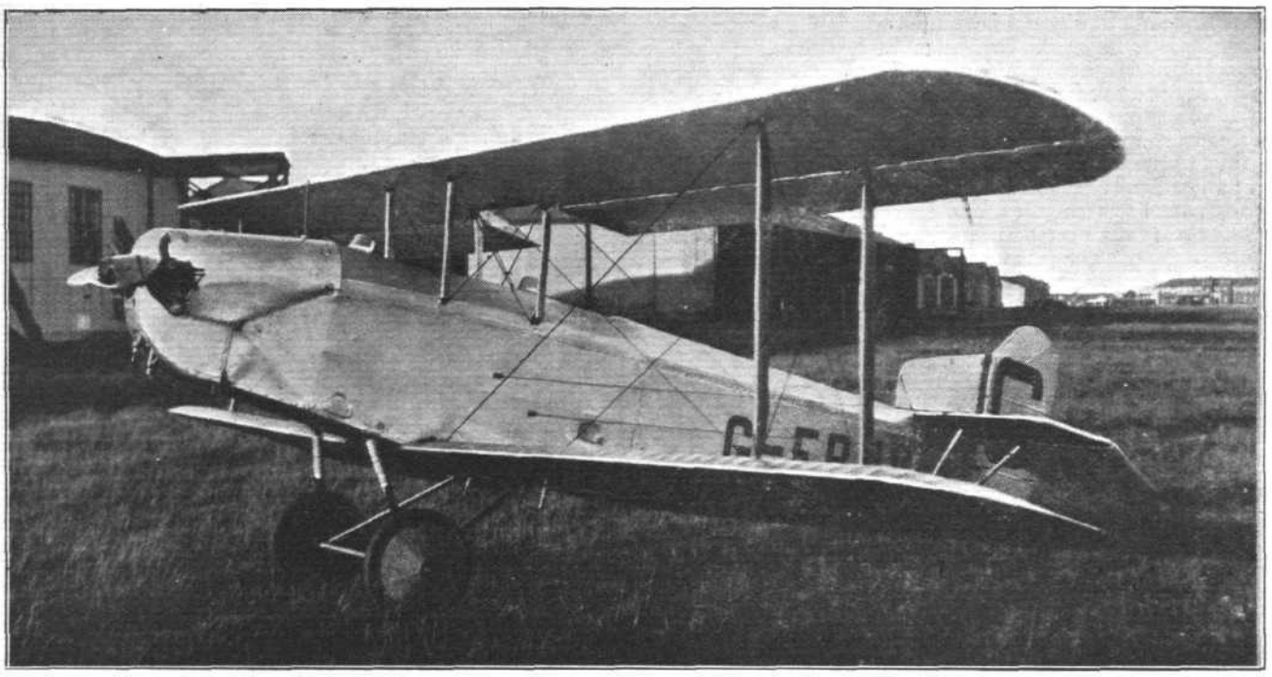
No. 14. The Parnall "Pixie III"

Bristol "Cherub" Engine

It may be recollected that in the 1924 Lympne meeting one of the Parnall "Pixie III" machines was convertible into a biplane by adding to the normal low-wing monoplane a top plane of slightly smaller area, the sloping strut bracing of the monoplane serving also for the support of the top plane. This top plane was added purely by way of gaining extra marks, and Mr. Harold Bolas, chief designer to Geo. Parnall and Co., much preferred the machine in its original monoplane form. This may explain why, in this year's competition, the "Pixie III" is to fly as a monoplane, although possibly the addition of the top plane might have enabled a slightly greater useful load to be carried, with a resultant gain in points scored. However, the monoplane is undoubtedly a good deal faster, and if the week happens to be windy it will score by having a higher cruising speed, and may thus easily make up for a slightly smaller useful load.



No. 15. THE SHORT "SATELLITE": This machine has been entered by the Seven Aeroplane Club.



No. 16. THE WESTLAND "WOODPIGEON": This machine has been entered by the Seven Aeroplane Club.

No. 15. The Short "Satellite"

A.B.C. "Scorpion Mark II"

The machines carrying the numbers 15 and 16 in the competition have been entered by the members of the "Seven Aeroplane Club." This club was formed originally at Eastchurch, and received its title from the fact that there were seven founder-members of the club.

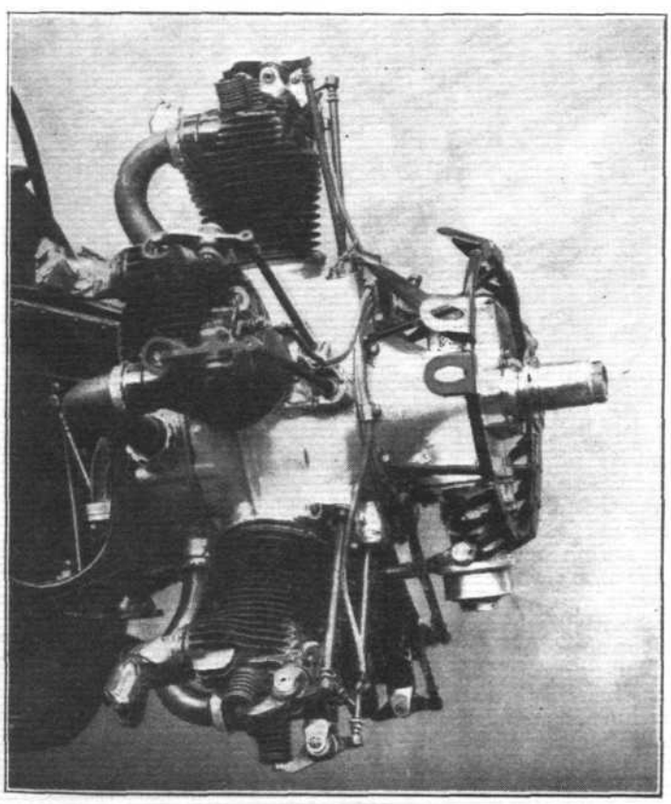
The Short "Satellite" is unaltered as regards the machine itself, but the members of the Seven Aeroplane Club have fitted an A.B.C. "Scorpion Mark II" in place of the original Bristol "Cherub." This engine has passed its Air Ministry type tests, but has not as yet had an opportunity to show what it can do when installed in a machine. The performance of the "Satellite" with its new power plant will be watched with interest.

No. 16. The Westland "Woodpigeon"

A.B.C. "Scorpion Mark II"

As far as we have been able to ascertain, the Westland "Woodpigeon," which has now been acquired by the Seven Aeroplane Club and entered by it for the Lympne meeting, is identical except for its engine with the machine which was designed and built by the Westland Aircraft Works, of Yeovil, for the 1924 competition.

ENGINES AT LYMPNE

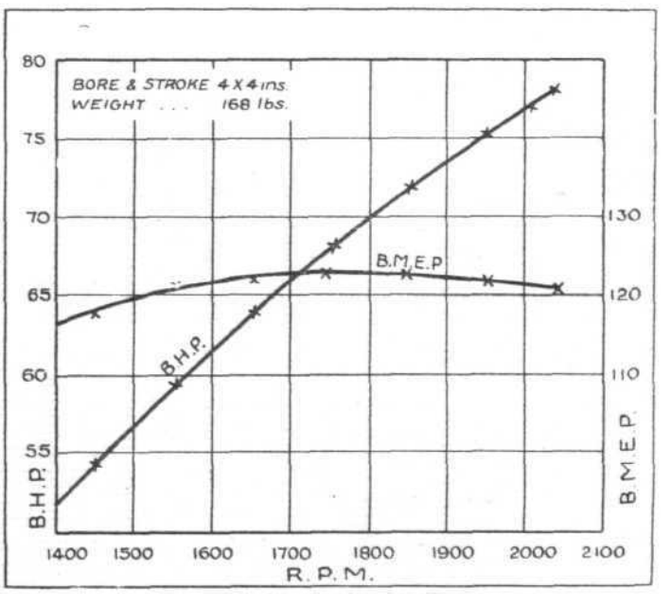


THE ARMSTRONG-SIDDELEY "GENET."

The Armstrong-Siddeley "Genet"

This is the latest arrival amongst the little army of light 'plane engines. While designed primarily for the Lympne competitions, the Armstrong-Siddeley Co. have also developed it on lines that will allow it to be produced on a commercial basis for use on light aeroplanes generally.

It is a 5-cylinder air-cooled radial, with cylinders having a bore and stroke of 4 ins. The normal speed is 1,850 r.p.m.



THE ARMSTRONG-SIDDELEY "GENET": Power curve.

when it develops 65 h.p. ; when speeded up to the maximum of 2,035 r.p.m. it develops 75 h.p. The weight, complete with magneto, carburettor, air intake, exhaust pipes, air-screw boss, etc., is 168 lbs., or 2·5 lbs. per h.p.

The cylinders are of steel, with aluminium-alloy semi-spherical heads shrunk, screwed, and lock-ringed on ; the valve seats and plug bosses are also shrunk in. Each cylinder has two inclined valves, cobalt-chrome steel for the exhaust and stainless steel for the inlet.

The crankshaft runs on ball bearings, the front main one taking the thrust. The master connecting rod is in one piece, and the master ring and auxiliary rods are of " H " section. The " Y " alloy forged pistons are provided with two rings, and a scraper ring above the floating gudgeon-pin and another below it.

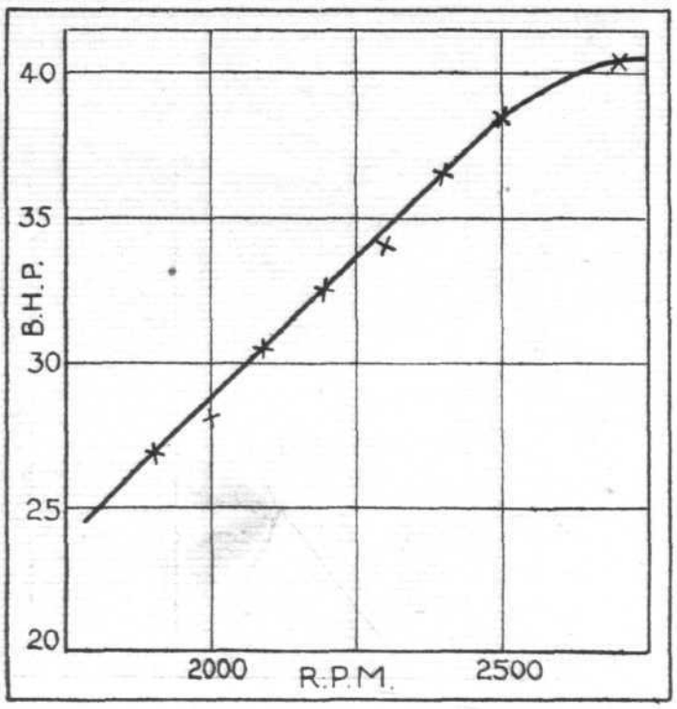
The petrol consumption at the rated h.p. is 0·575 pints per b.h.p. hour, and the oil consumption 1 pint per hour.

The A.B.C. " Scorpion Mark II "

In stating, in our issue of July 29, that but one new engine had been produced for the forthcoming light 'plane competition at Lympne for the *Daily Mail* prizes, we were apparently not entirely correct, since we now learn that the A.B.C. " Scorpion " which is being fitted in the Westland " Woodpigeon " and Short " Satellite " machines competing at Lympne, is the " Mark II," which is an entirely new design, and should in no way be confused with the " Scorpion " engines used in earlier competitions.

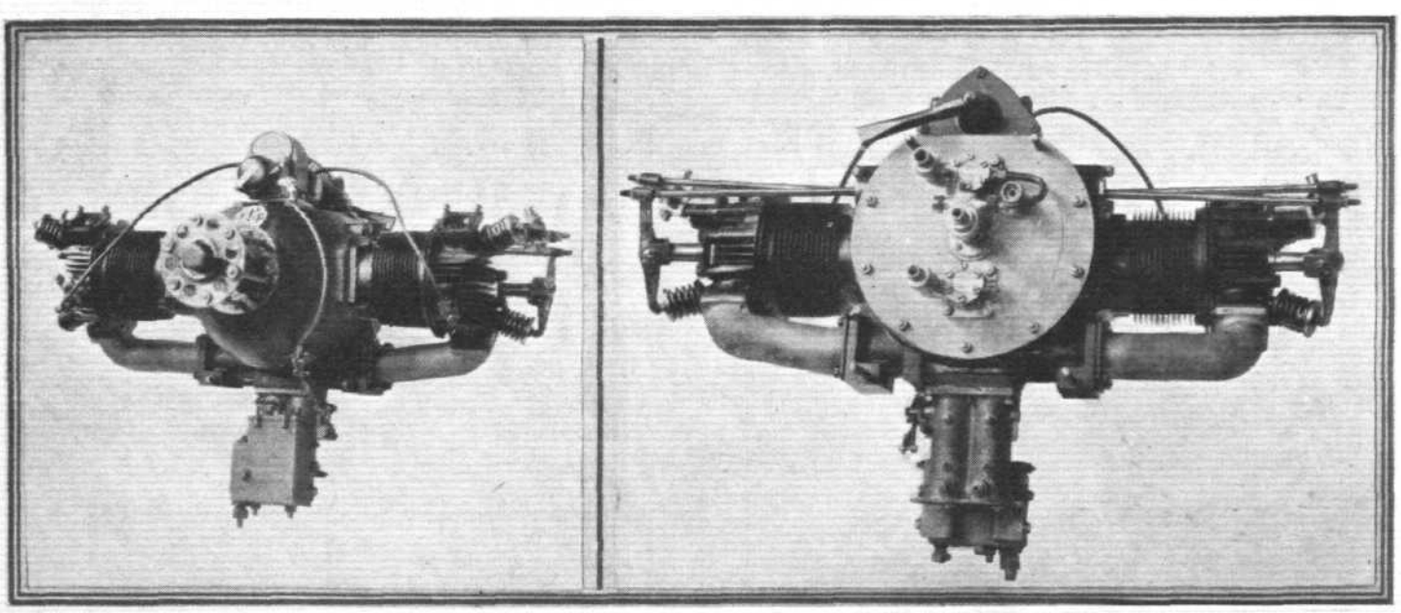
The " Scorpion Mark II " is, like the older engine, a flat twin air-cooled, with a cylinder capacity of 1,500 c.c., a bore of 4·015 in., and a stroke of 3·6 in. The normal revolutions are 2,300 r.p.m., at which speed the engine develops 34 h.p. The maximum permissible speed is 2,530 r.p.m., corresponding to a power of 39 b.h.p. Actually the power still continues to increase, as the accompanying power curve will show.

The magneto fitted is a B.T.H. with impulse starter, while the carburettor is a special Zenith twin.



The A.B.C. " Scorpion II " : This power curve indicates that the engine develops just over 40 h.p. at 2,750 r.p.m. The weight of the engine is 106 lbs.

Avro " Avis " and A.N.E.C. " Missel Thrush " Lympne machines, passed its 100 hours' type test during the end of last year with very satisfactory results. The " Thrush " is a 3-cylinder air-cooled radial of inverted Y-type, with a



NEW ENGINE FOR LYMPNE : The A.B.C. " Scorpion II," which has recently passed the Air Ministry Type Tests. The engine is here shown in front and rear views.

Low petrol and oil consumptions are features of the " Scorpion II," the former being 0·52 lb./h.p./hour at normal revs. (*i.e.*, 17·68 lb./hour), and the latter 0·039 lb./h.p./hour (1·326 lb./hour).

As the machines into which the engine is being fitted are likely to fly at round about 70 m.p.h. at normal power, and the engine develops this power at the relatively low speed of 2,300 r.p.m., the propeller efficiency should be quite good.

The weight of the " Scorpion II " is 106 lb., corresponding to a weight of 3·1 lb./h.p. on a basis of normal power, and 2·72 lb./h.p. on maximum power.

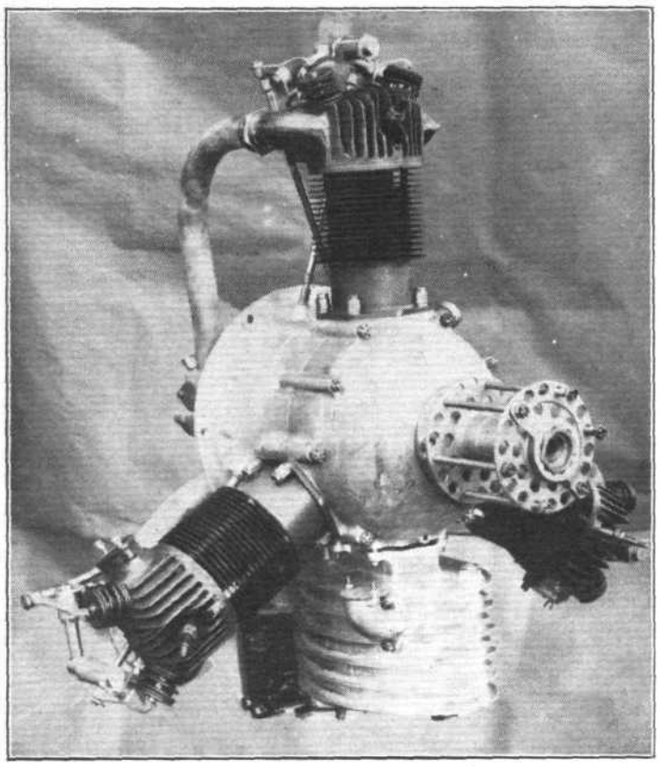
The Blackburne " Thrush "

A 1,500 c.c. 3-Cylinder Radial

The Blackburne " Thrush," produced by Burney and Blackburne, of Bookham, Surrey, and which is fitted in the capacity of 1,500 c.c. Generally it is similar to the 1924 model, but differs, apart from the increase of capacity, in several detail improvements, which have resulted in a considerable increase of efficiency.

It weighs, including oil sump, exhaust pipes, induction and ignition system, starter, propeller hub, etc., 132 lbs. The normal speed of the engine is 2,500 r.p.m., allowing for direct drive with reasonably good air-screw efficiency, and the power developed at this speed is 35 b.h.p. A maximum of 38 b.h.p. is developed at top speed, which is 2,750 r.p.m. Thus the weight per h.p., based on normal power, is 3·77 lbs. per h.p., and whilst this figure is not exceptional as regards lightness, the " Thrush " scores considerably in the matter of strong but simple construction and low fuel consumption.

The cylinders, having a bore of 81 mm. and stroke of 96·8 mm., are of steel, with detachable cast-iron heads carrying the overhead valves. The cylinders are secured to



THE BLACKBURNE "THRUSH": A 3-cylinder Y air-cooled radial of 1,500 c.c.

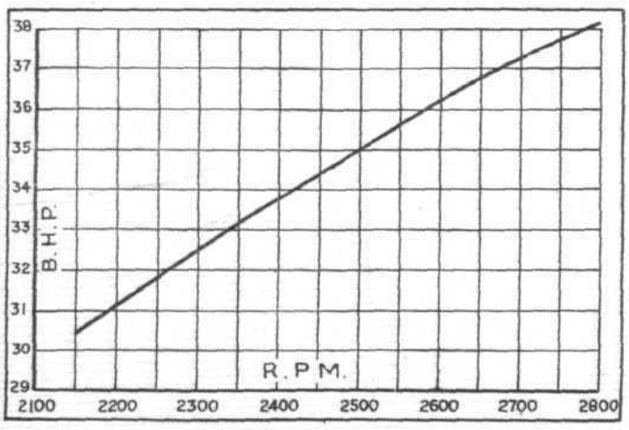
the large aluminium crank-case by four bolts each, while six bolts secure the cylinder head to the cylinder. The crankcase is divided laterally, the front half being dome-shaped and internally ribbed, and carrying two main ball-journal bearings for the crankshaft; the rear half carries a plain crankshaft bearing, and also the valve timing gear.

Built into the lower portion of the crankcase is a large oil sump, in the form of an aluminium casting with cooling ribs. Oil is pumped from this sump through a filter, and delivered to the bearings, and thence returns to the sump.

The hollow crankshaft is built up in two halves, the crank-pin being splined at its rear end, where it fits into the rear web, which is slotted for locking the pin in place. The three connecting rods are identical, and bear side by side on the crankpin; the big ends are provided with roller bearings.

Plain spur gearing is employed for the timing, which is enclosed in the rear half of the crankcase. A driving pinion on the crankshaft engages with three gear wheels, symmetrically disposed around the crankshaft, each actuating its respective valves through a camshaft. One of the three gears also engages with a fourth, which operates the helical gear for the oil pump and the magneto drive. The tulip valves are operated by tappets from rockers in the timing gear-case.

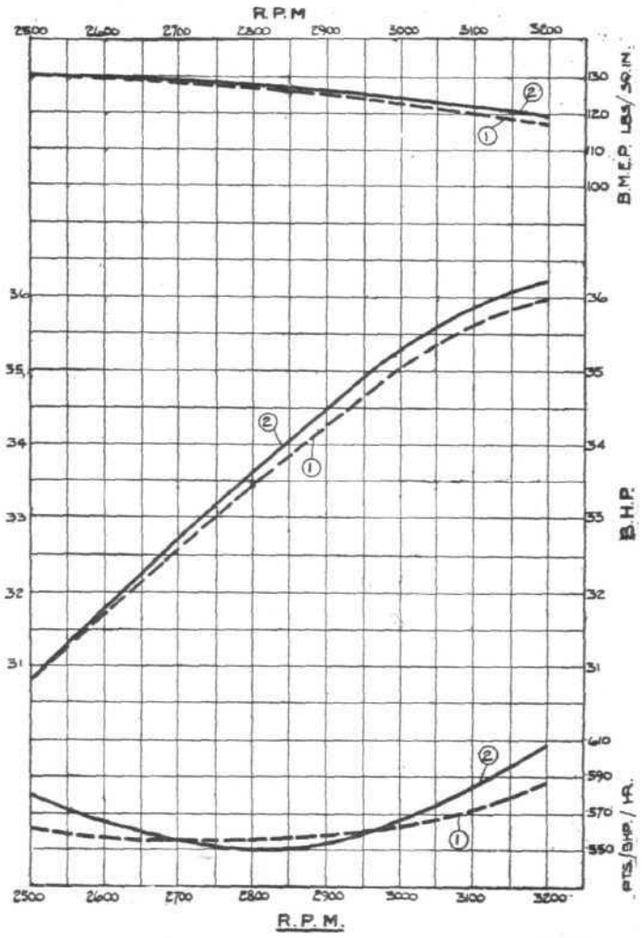
The B.T.H. magneto is mounted on a bracket on the back of the crankcase cover, and a Claudel-Hobson, type M.B.P., carburettor is fitted. Each cylinder has two sparking plugs. The pistons are of aluminium.



THE BLACKBURNE "THRUSH": Power curve.

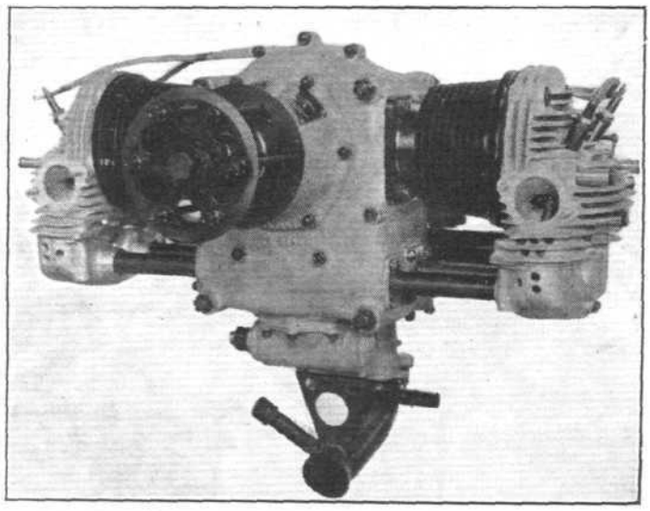
The Bristol "Cherub" Series III

Bristol "Cherub" engines are fitted to nearly half the machines entered for the Lympne meeting. In the Series III "Cherub" we have many important improvements on the original "Cherub," for, although even from the start this little engine met with considerable success, the Bristol Aeroplane Co., of Filton, decided to develop it still further,



THE NEW BRISTOL "CHERUB" SERIES III: Power curves, (1) taken before 100-hours type test, and (2) taken after tests.

with the result that they have produced an engine for use in light 'planes which is equal in efficiency and reliability to the best modern large aero engines.



THE NEW BRISTOL "CHERUB" SERIES III: Three-quarter front view.

That they have succeeded is indicated by the fact that the "Cherub III" has passed the Air Ministry 100-hours' Type Test without difficulty. It develops a normal power of 36 b.h.p. at 3,200 r.p.m., and weighs only 95 lbs., or 2·88 lbs. per h.p. The fuel and oil consumptions are also remarkably low—2 galls. of oil per hour and 1 pint of petrol per hour.

The most important changes in the design of the "Cherub III" are as follows :—The bore has been increased to 90 mm., and the capacity to 1,288 c.c. The cylinder-heads have been re-designed, with new type valves having triple valve-springs. The crankcase has been made stronger but smaller, and has a dry sump. An extra gas-ring has been added to the pistons, and a new improved type of scraper ring is used. The method of mounting the engine has also been improved, whilst the ignition and altitude controls are automatic, and are interconnected with the throttle.

The following is a general description of the "Cherub III." The cylinders have steel barrels and aluminium alloy heads carrying the screwed-in alloy steel valve seats, valve guides, valves, inlet and exhaust passages. The head is made gas-tight by means of a packing piece of a special alloy (having a low rate of expansion) between the cylinder heads and the heads of the securing bolts, and a copper ring joint. Inlet and exhaust valves, of cobalt-chrome steel, are interchangeable, and have three concentric springs each.

The camshaft, driven by spur gears, lies across the crankcase below the crankshaft, and operates the valves through rocker shafts which run parallel to the cylinder axes from crankcase to cylinder head. The crankshaft is a case-hardening alloy steel stamping carried on four bearings—two double-row self-aligning and one (front) deep groove thrust type. The connecting rods are alloy steel forgings with hardened liners pressed into the big ends, which are slipped over the shaft and then split bronze-floating bushes inserted.

Aluminium alloy pistons are employed, each having three rings. Hollow gudgeon pins float both in the piston bosses and in the core-rod small ends. The crankcase is an aluminium casting, split vertically on engine center line, and provided with separate front and rear covers. The magneto is driven by spiral gears from the rear end of the crankshaft, and is mounted on the rear crankcase cover. A special type Zenith carburettor, with hand-operated altitude control, is fitted.

AIR RACING AT LYMPNE

Three Events to Follow Competition

On Saturday, September 18, three air races, quite apart from the light 'plane competition, will be held at Lympne. These are :—The race for the Grosvenor Challenge Cup, the race for the Society of Motor Manufacturers and Traders' Prize, and the Lympne Open Handicap.

The Race for the S.M.M.T. Prize

At the conclusion of the competition, a race on handicap will be held over a course of 75 miles, *i.e.*, 6 laps of the Lympne course. This race will be open to aeroplanes taking part in the *Daily Mail* light 'plane competition, provided they have accomplished at least 50 per cent. of the 1,964 miles' course. The prize offered by the Society of Motor Manufacturers and Traders is one of 200 guineas.

The Grosvenor Challenge Cup Handicap

This race, to be held under the Competition Rules of the Royal Aero Club, is for the Challenge Cup presented by Lord Edward Grosvenor, and for prizes (first prize £75 and second prize £25) presented by Sir Charles Wakefield, Bart. The race will be over a distance of 75 miles, *i.e.*, 6 laps of the 12½ miles' circuit at Lympne, and is open to any aeroplane the weight of the engine of which does not exceed 275 lbs.

The Lympne Open Handicap

To be held under the Competition Rules of the Royal Aero Club, this race is open to all types of aeroplanes, and the machines will be handicapped on a time allowance basis. Entries will be received up to noon on September 15, and should be addressed to the Royal Aero Club, Lympne Aerodrome, near Hythe, Kent. The entrant should state type of aeroplane, engine, registration marks, and name of pilot. In the case of aeroplanes which have taken part in the light 'plane competition no particulars are required relating to aeroplane and engine unless modifications have been made. Machines entered for this race must be at Lympne Aerodrome not later than 12 noon on Saturday, September 18, for verification by the officials.

For this race the following prizes are offered :—First prize, £60 ; second prize, £30 ; third prize, £10.

During the day parachute descents will be made by Miss June.

Officials of the Lympne Meeting

Following is a list of officials at the Lympne Light 'Plane Meeting :—

Stewards.—Lieut.-Col. Sir Francis K. McClean, A.F.C., Major R. H. Mayo, Capt. C. B. Wilson, M.C.

Judge.—Air Commodore F. C. Halahan, M.C., C.B.E., D.S.O., M.V.O.

Official Recorder.—Lieut.-Col. W. A. Bristow.

Clerk of the Course.—Lieut.-Col. M. O. Darby.

Timekeepers.—Col. F. Lindsay Lloyd, C.M.G., C.B.E., and A. G. Reynolds.

Chief Marshal.—Howard T. Wright.

Fuel Measurer.—Professor A. M. Low.

Clerk of the Scales.—Capt. W. Dancy.

Press Steward.—Sir Guy Standing, K.B.E.

Aerodrome Official.—Commander S. Deacon.

Executive Committee.—Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C. ; Lieut.-Col. W. A. Bristow ; Capt. R. J. Goodman Crouch ; Lord Edward A. Grosvenor ; Howard T. Wright.

Secretary of the Meeting.—Harold E. Perrin.

Assistant Secretary.—B. Stevenson.

FLIGHT

COMMERCIAL FOKKERS FOR SWITZERLAND

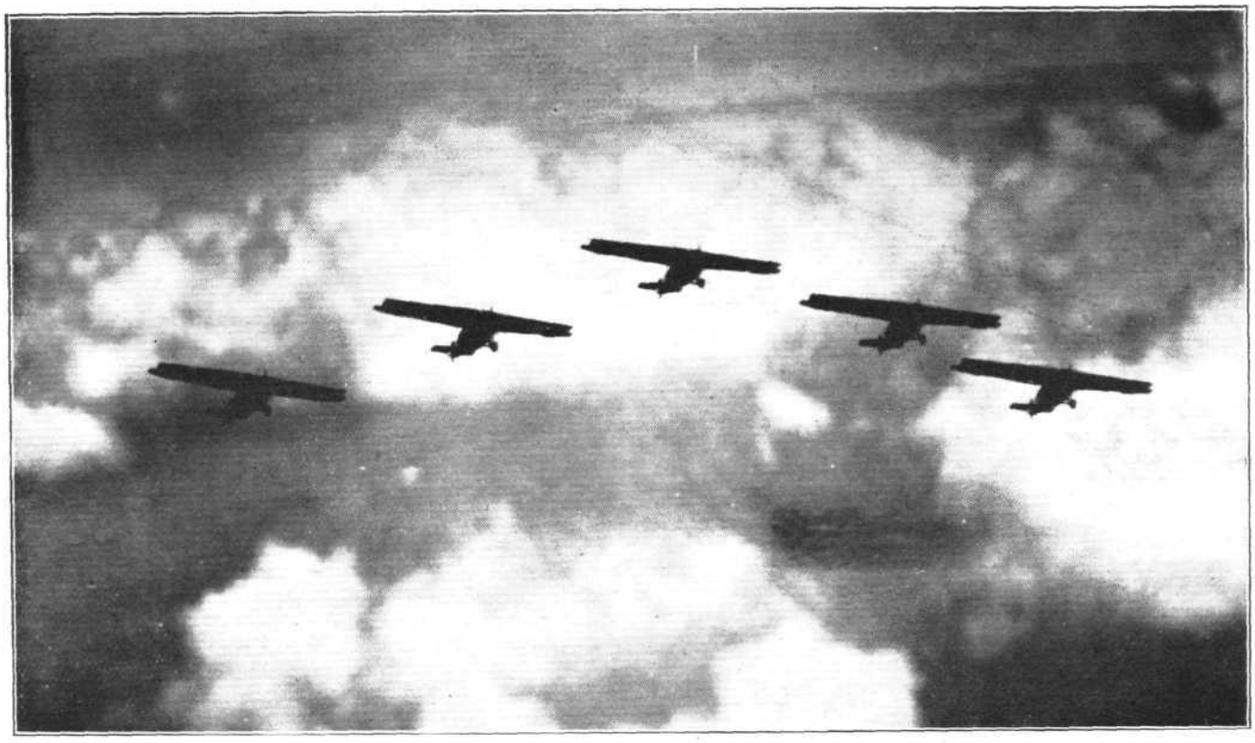
A FEW months ago, as previously reported in FLIGHT, the K.L.M. sold five of its Fokker F.III planes to the Swiss Balair Company and replaced them by the bigger F.VII type, as the F.III's had become too small for the much-increased K.L.M. traffic. These F.III's had respectively 2,236, 1,944, 1,930, 1,830 and 1,760 flying hours to their credit. During the two months of operation by the Balair Company these machines have given every satisfaction, as appears from the following letter to the K.L.M. :—

"Since April 19 we have operated on our lines Frankfurt-Karlsruhe-Basle-Geneva-Lyons, Basle-Stuttgart, the five Fokkers F.III with Siddeley Puma motors, bought from the K.L.M., and we have not had any defects of importance.

"The only defect which we have to register so far was due to a complete 'soaking,' which occurred to one of these machines because it stood in streaming rain during two days and one night at Frankfurt aerodrome. Frankfurt has not yet constructed hangars at its aerodrome, so that the aeroplanes must be stationed in the open air. That no more defects have occurred is only due to the excellent construction of the aeroplanes and the Siddeley Puma motors. 'Childhood's illnesses,' to which new machines are subjected, are completely removed. During the 500 hours these machines have behind them no abnormal defects have been noticed, and all minor troubles experienced are such as will always happen to aircraft of today. The different requirements made by the Swiss Air Office have demonstrated that the machines have had the best care by the K.L.M.

"We have much pleasure in certifying this and are convinced that the machines can be used still many hundreds of flying hours if they will have a careful treatment."

The five machines, it will be remembered, were delivered by air to the Balair Company, and flew in formation from Holland to Switzerland, as depicted in the accompanying illustration.



FOKKERS FOR SWITZERLAND : A formation of Fokker F.III (Siddeley "Puma") commercial monoplanes, originally employed by K.L.M. on their air lines, being flown from Holland to Switzerland, where they have been put into service by the Basle Air Traffic Co., "Balair"

King of Belgians and International League of Aviators

ALTHOUGH not a pilot himself, Albert, King of the Belgians is highly airminded, and does not miss an opportunity to impress his subjects with the importance of air power and the great future of aerial transport. King Albert was incidentally the first sovereign to own an aeroplane, and he frequently makes air trips, piloted by Monsieur Crombez, the well-known Belgian pre-war aviator. The soldier-king has just given another proof of his interest in aeronautics and his concern with the well-being of airmen by granting his High Patronage to the International League of Aviators, which has its headquarters in Paris. This Association was formed last spring thanks to the co-operation of the *Vieilles Tiges* and the *Pionieri italiani dell' Aeronautica*, the French and Italian pre-war aviators' societies respectively. Other national posts are in course of organization in Great Britain, Belgium, Holland, Czechoslovakia, Portugal, Canada and the United States. The official announcement of the Royal decision, which was received by Mr. Clifford B. Harmon, President of the League, from General Menschaert, aide-de-camp of the King, will give a further impetus to the development of this body of flying men, which will ultimately have branches in all countries of the world.

London-Marseilles Air Mails

THE Postmaster-General draws attention to the opportunity which the recently established Friday morning Air Mail from London to Marseilles offers of overtaking at Marseilles or Toulon the mails for India, Egypt, Iraq, Aden, East Africa, and, in most weeks, Australia, despatched from this country on the previous evening by ordinary route. The new Air Mail has, so far, made regular connection with the Peninsular and Oriental or Orient Packet at Marseilles or Toulon. Fuller particulars of the new service are given in the Air Mail leaflet, a copy of which can be obtained free at any head or branch post office, and the latest time of posting can be ascertained at the local head post office.

Australian Flight to the South Seas

THE Royal Australian Air Force is making arrangements for a big flight from Australia to New Guinea, the Solomon Islands, New Hebrides, Fiji, New Caledonia and Samoa, then back to Australia, a total distance of some 14,000 miles. This flight will be carried out, probably this month, by Group-Capt. Eric Williams, on a D.H.50 seaplane fitted with a 240 Siddeley "Puma" engine. A mechanic and wireless operator will form the crew.

LIGHT 'PLANE CLUB DOINGS

London Aeroplane Club

THE total flying time for the week ending September 5, was 29 hrs. 30 mins.

The following members had flying instruction :—Lady Bailey, K. V. Wright Miss O'Brien, E. C. Bonner, J. H. H. Luxton, R. L. Portway, G. Black, A. R Ogston, D. P. H. Esler, J. C. Parkinson, E. K. Blyth, G. E. Clair, B. B. Tucker, T. W. Eady, C. H. Tutt, Col. Farfan, R. A. St. John, M. P. Susman, H. R. Presland, H. Solomon, A. J. Richardson, G. Lyon, H. F. Wight.

The following Members flew solo :—N. J. Hulbert, A. R. Ogston, N. Jones, Major Beaumont, G. H. Craig, O. J. Tapper, Miss O'Brien, M. L. Bramson, L. J. C. Mitchell, E. S. Brough, W. Hay, E. K. Blyth, A. H. M. Lees, B. B. Tucker, H. Petre, R. Malcolm, E. D. Moss, E. L. O. Baddeley. A. Aitkenhead was given a joy ride.

The following have passed the tests for their Aviators' Certificates :—S. O. Bradshaw, O. J. Tapper, A. Lees.

The flying time during the month of August was 149 hrs. 25 mins. This was made up as follows :—

Test flying, 8 hrs. 20 mins. ; Joy rides, 6 hrs. 45 mins. ; Solo flying by Members, 46 hrs. 50 mins. ; Dual instruction, 76 hrs, 40 mins. ; Instructors time at Bournemouth, 10 hrs. 50 mins. ; Total, 149 hrs. 25 mins.

The Hampshire Aeroplane Club

REPORT for week ending September 2 :—Total flying time, 17 hours 41 mins. ; instruction flying, 16 hours 16 mins. ; passenger flying, 1 hour 10 mins. ; solo flying, 15 mins.

The following members received instruction : Miss Home, 1 hr. 22 mins. ; Major Jenkins, 1 hr. 15 mins. ; Lt. Traill, R.N., 52 mins. ; Lieut. Graham, R.N., 10 mins. ; Wing-Comdr. Wyllie, 20 mins. ; Messrs. Simmonds, 2 hrs. 5 mins. ; Dobson, 1 hr. 40 mins. ; Biship, 1 hr. 15 mins. ; Kerry, 40 mins. ; Nicholson, 40 mins. ; Heathcote, 40 mins. ; Fry, 50 mins. ; Stokes, 45 mins. ; Perfect, 35 mins. ; Dickson, 30 mins. ; Bound, 25 mins. ; Keeping, 25 mins. ; Everett, 20 mins. ; Fowler, 15 mins. ; Mansbridge, 15 mins. ; Shepherd, 12 mins. ; Courtney, 10 mins. ; Henderson, 10 mins.

The following members received passenger flights :—Mrs. Saunderson, Miss Jowett, Dr. Jowett, Prof. J. O. Thomson.

On Wednesday, September 1, two members flew solo, viz., Mr. O. E. Simmonds, Chairman of Committee, and Flying Officer Clarkson.

Will members please note that in future the club will be closed on Mondays from 1 p.m. until Tuesday, 11 a.m.

The Lancashire Aero Club

TOTAL time flown during week, 33 hours. The weather has again been bad. On two days out of the six flying has been impossible. Machines in use : L-V and M-Q (" Moths ") and O-K (Renault Avro).

Mr. Stack gave instruction to : Messrs. Costa, 4 hrs. 40 mins. ; Nelson, 1 hr. 45 mins. ; Gattrell, 1 hr. 35 mins. ; Leigh, 1 hr. 25 mins. ; Honeyball, 1 hr. 20 mins. ; Moss, 1 hr. 20 mins. ; Newton, 1 hr. 15 mins. ; Gerrard, 45 mins. ; Wade, 45 mins. ; Mrs. Marck, 40 mins. ; Benson, 30 mins. ; Bert, 30 mins. ; Goodyear, 15 mins. ; Agar, 15 mins. Total, 17 hrs.

Mr. Cantrall gave instruction to : Messrs. Newton, 30 mins. ; Goodyear, 25 mins. ; Agar, 15 mins. ; Bert, 15 mins. Total, 1 hr. 25 mins.

Mr. Scholes gave instruction to : Messrs. Fray, 35 mins. ; Bert, 35 mins. ; Barker, 25 mins. ; Crabtree, 15 mins. Total, 1 hr. 55 mins.

The following made solo flights : Messrs. Goodfellow, 2 hrs. 15 mins. ; Leeming, 1 hr. 50 mins. ; Pitman, 1 hr. 30 mins. ; Agar, 1 hr. 25 mins. ; Nicholson, 1 hr. 15 mins. ; Marsland, 35 mins. ; Parker, 35 mins. ; Williams, 35 mins. ; Goodyear, 20 mins. ; Crabtree, 15 mins. Total solo, 10 hrs. 35 mins.

The following had joy rides with Messrs. Goodfellow and Leeming : Mrs. R. William, 25 mins. ; D. Agar, 20 mins. ; F. Honeyball, 20 mins. ; Mrs. Chegland, 15 mins. ; Mrs. Hollinsworth, 10 mins. ; F. Scholes, 10 mins.

Mr. Marsland made his first solo this week. He had previously flown in 1919, but except for a brief course of " dual " had not been in the air for seven years.

Newcastle-upon-Tyne Aeroplane Club

FLYING report for week ending September 5 (less racing flying) :—Total flying time, 31 hrs. 10 mins. Dual, 22 hrs. 25 mins. Solo, 7 hrs. 45 mins. Tests, 30 mins. Passenger flights, 30 mins.

Details will be published next week, as it has not been possible to complete the report, owing to the flying meeting, in time for this issue.

The club's first flying meeting was a complete success in every way, and a full report will appear in next week's FLIGHT.

PERSONALS

To be Married

The engagement is announced between DONALD CAMPBELL SHAW, R.A.F., youngest son of Mr. and Mrs. W. SHAW, Wolverhampton, Staffordshire, and JOYCE, only daughter of Mr. and Mrs. R. W. BILL, Paignton, Devonshire.

The engagement is announced between Sqdr.-Leader B. FITZGERALD MOORE, R.A.F., Iraq, twin son of the late W. Robert Fitzgerald Moore, M.I.M.E., M.I.C.E., Mintaro, Monegelta, Australia, and Mrs. Fitzgerald Moore, and DOROTHY, elder daughter of Mr. and Mrs. R. S. N. FARO, of the Old Forge House, Canterbury.

Married

Group Captain C. L. COURTNEY, C.B.E., D.S.O., youngest son of W. L. COURTNEY, M.A., LL.D., was married on September 1 to Mrs. RAYSON, daughter of G. E. GREENSILL.

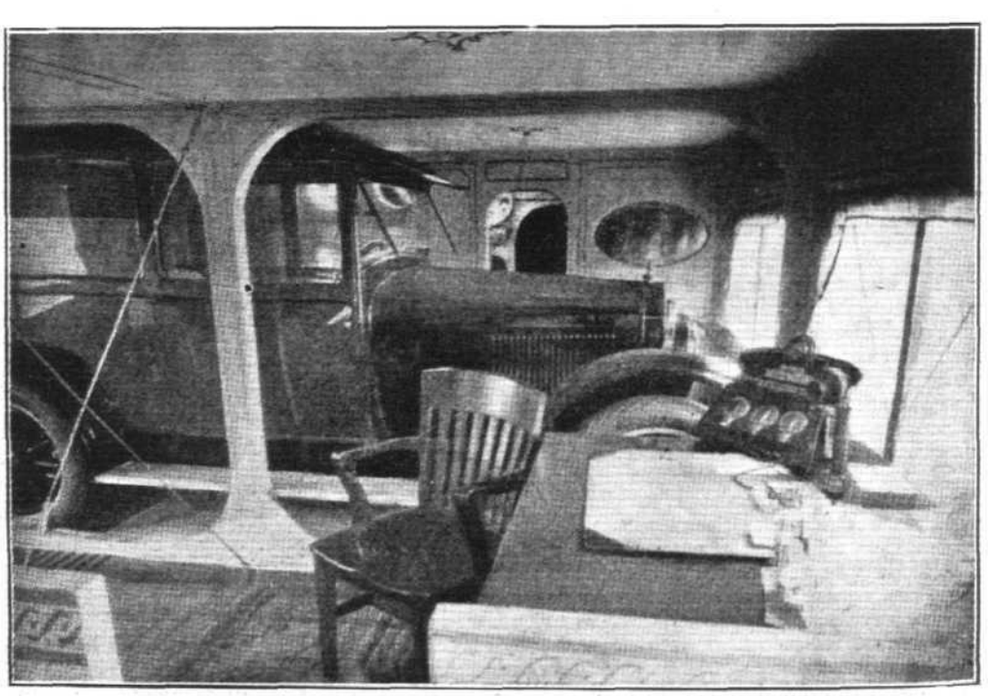
Sqdn.-Ldr. J. H. SIMPSON, R.A.F., was married in London on August 7 to WINIFRED ELSIE, daughter of CHARLES BERNARD and MRS. BENSON, of Dorchester.

Royal Air Force Flying Accidents

THE Air Ministry regrets to announce that as the result of an accident at Marchwood, Hampshire, to a Bristol Fighter of No. 16 Squadron, Old Sarum, Salisbury, on August 31, Pilot Officer Alfred Lionel René Page, the pilot of the aircraft, was killed, and No. 328941, L.A.C. Eric Arthur Lister Lowe was dangerously injured, and died in the Royal Victoria Hospital, Netley, on September 1.

As the result of an accident at Hinaidi, Iraq, to a D.H.9A, of No. 55 Squadron, Hinaidi, on September 1, 1926, Flying Officer William Osmond Du Port, the pilot of the aircraft, was killed, and No. 335313, L.A.C. William Arthur Pearse was severely injured, and died of his injuries on September 2.

As the result of an accident to an Avro Bison of No. 421 Flight while landing on the deck of H.M.S. " Furious " at sea off Nab Tower, near Bembridge, Isle of Wight, on September 6, No. J. 48913 Leading Telegraphist James William Haddow, R.N., was killed. Flying Officer Sylvanus George Connolly, the pilot of the aircraft, and No. 347436 L. A. C. George Frederick Wyborn sustained only slight injuries.



An Aerial Show-Room for Motor Cars : Our picture shows an interior view of the cabin of the American Remington Burnelli " RB2 " air liner fitted up as a motor-car showroom, complete with an Essex motor-car, and office equipment. So fitted, it carried out an aerial tour, with eight passengers, in the States. The fuselage of the " RB2," it may be mentioned, is exceptionally wide and deep, forming, in side elevation, the contour of an aerofoil.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, September 3, 1926.

General Duties Branch

The following Pilot Officers are promoted to the rank of Flying Officer :—J. G. Franks, (June 17) ; W. A. Cooke (June 25) ; R. W. Holden (Lt., T.A.R. of O.) (Aug. 13) ; D. S. Green (Aug. 17).

Pilot Officer on probation W. C. McNeil is confirmed in rank (Aug. 12) ; Flying Officer P. H. Hunter is placed on the retired list at his own request (Sept. 1).

The following Flying Officers are transferred to the Reserve, Class A :—H. A. Bayne, N. M. Firench, H. P. L. Gardner, A. E. Golds, R. H. Windsor (Aug. 29) ; A. M. Glover, E. C. N. Jeffries (Sept. 1).

Flying Officer C. Ayling relinquishes his short service commission on account of ill-health, and is permitted to retain his rank (Aug. 30) ; G. F. N. Bradford, Lt., R.N., Flying Officer, R.A.F., relinquishes his temporary commission on return to Naval duty (Sept. 1).

Accountant Branch

Pilot Officer on probation J. O. Morrison is confirmed in rank and promoted to the rank of Flying Officer (Aug. 10).

Medical Branch

Medical Quartermaster and Flying Officer C. B. Willsher is placed on the retired list on account of ill-health (Sept. 1).

Memorandum

The permission granted to Sec. Lieut. J. F. R. Greeff to retain rank is withdrawn on enlistment in the R.A.F.

Reserve of Air Force Officers

The following are granted commissions in Class A.A., General Duties Branch, as Pilot Officers on probation :—A. G. Store (Aug. 9) ; H. J. Phillips (Aug. 16) ; A. B. Roche (Aug. 16) ; S. O. Tudor (Aug. 17).

The following Flying Officers relinquish their commissions on completion of service :—W. A. Warwick (May 29) ; J. Baird (Aug. 28) ; L. W. Allen (Sept. 1.).

Flying Officer A. B. Roche resigns his commission in Class B on appointment to a commission in Class A.A. (Aug. 16).

Princess Mary's R.A.F. Nursing Service

Miss E. R. James resigns her appointment as Sister (Aug. 12).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Group Captains :—P. L. W. Herbert, C.M.G., C.B.E., to Fighting Area H.Q. Uxbridge, for Air Staff duties ; 25.8.26. A. G. Board, C.M.G., D.S.O., to No. 21 Group H.Q., West Drayton, 20.8.26, to command, with effect from 25.8.26.

Wing Commanders : C. W. H. Pulford, O.B.E., A.F.C., to H.M.S. *Furious*, pending posting as Senior Air Force Officer ; 1.9.26. E. W. Norton, D.Sc., to R.A.F. Depot, Uxbridge, pending commencement of Staff Course at R.N. College, Greenwich, on transfer to Home Estab. ; 20.8.26. C. G. H. Cooke, D.Sc., A.F.3., to R.A.F. Base, Malta, pending taking over command ; 20.8.26.

Squadron-Leaders : L. C. Keeble, to R.A.F. Base, Gosport ; 24.8.26. R. S. Booth, A.F.C., to Royal Airship Works, Cardington ; 13.9.26. F. R. Alford, M.C., to No. 6 Armoured Car Co., Iraq ; 10.8.26. G. H. Hall, A.F.C., to record Office, Ruislip ; 6.9.26.

Flight-Lieutenants E. C. Emmett, M.C., D.F.C., to Armament and Gunnery Sch., Eastchurch ; 14.8.26. E. J. D. Routh, to Superintendent of Reserves, Northolt ; 3.9.26. C. A. Horn, to Station H.Q., Andover ; 24.8.26. N. V. Wrigley, to Aircraft Depot, Iraq ; 9.8.26. A. H. Goldie, to No. 216 Sqdn., Egypt ; 11.8.26. S. S. Benson, A.F.C., to H.Q., Iraq ; 13.8.26.

Flying Officers : W. J. Brown, to R.A.F. Depot, Uxbridge, on transfer to Home Estab. ; 17.8.26. V. F. Whatling, D.S.M., to R.A.F. Base, Gosport ; 6.8.26. C. S. Whellock, to Sch. of Store Accounting and Storekeeping, Kidbrooke, on transfer to Home Estab. ; 16.8.26. L. Young, to Home Aircraft Depot, Henlow, on transfer to Home Estab. ; 18.8.26. B. H. Shaw, to R.A.F. Depot, Uxbridge, on transfer to Home Estab. ; 13.8.26. H. L. Drake to Aircraft Depot, India ; 21.7.26. H. Walker, to R.A.F. Depot, Uxbridge (Non-effective Pool), on transfer to Home Estab. ; 16.8.26. F. H. H. Twelvetree, to R.A.F. Base, Calshot ; 8.9.26. L. W. Lane, to No. 16 Sqdn., Old Sarum ; 13.9.26.

Pilot Officers : W. F. Bryanton, to No. 30 Sqdn., Iraq ; 16.7.26. J. A. E. Inkster, to No. 30 Sqdn., Iraq ; 27.7.26. L. B. McGoverne, to R.A.F. Depot, Uxbridge (Non-effective Pool), on transfer to Home Estab. ; 16.8.26. E. C. L. Richardson, to No. 70 Sqdn., Iraq ; 27.7.26.

Stores Branch

Flying Officers : W. Liniker, to Station H.Q., Andover ; 2.9.26. L. L. Bray, to No. 17 Sqdn., Hawkinge ; 25.8.26.

Accountant Branch

Flying Officer D. J. Sherlock, to Aircraft Depot, Iraq ; 13.8.26.

Medical Branch

Group Captain A. W. Iredell, to H.Q., Inland Area, Stanmore, for duty as Principal Medical Officer ; 6.9.26.

Wing Commander W. Tyrrell, D.S.O., M.C., M.B., D.P.H., to H.Q., Halton, for duty as Principal Medical Officer ; 6.9.26.

Flying Officers : C. W. Coffey and J. Hutchieson, M.B., to Research Lab. and Medical Officers' Sch. of Instruction on appointment to short service commn. ; 24.8.26.

Flight-Lieutenant (*Dental*) H. J. Procter, to No. 5 Flying Training Sch., Sealand ; 19.8.26.

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Fatal Air Crash at Dorking

A REGRETTABLE flying accident occurred near Dorking on September 2, when an aeroplane, piloted by Capt. R. H. Leavey, who was accompanied by Mrs. Marjorie Lily Stallard and Mr. Arnold Keene, crashed whilst flying from Bognor to the Crystal Palace, where exhibition and "stunt" flights were to have been carried out. Weather conditions were very bad at the time, with low fog, and the machine was seen to be circling low down over Polesden Lacy, as if the pilot were looking for a place to land. It then nose-dived into the ground, and burst into flames. The machine was almost completely destroyed and only the mechanic Keene was removed from the wreckage alive, and he was immediately taken to the Leatherhead Cottage Hospital, where he died as a result of his injuries that evening. The other two occupants could not be removed until after the fierce flames had died down, when they were found to be terribly injured and burned ; they were both dead. The Air Ministry examination of the machine disclosed the fact that no part of the structure failed in the air and that no defect had developed in the controls before the machine crashed to the ground.

A CZECHO-SLOVAKIAN AIR TOUR OF EUROPE: Capt. Stanovsky, the Czecho-slovakian pilot, standing beside his "Aero" biplane (240 h.p., Perun engine) on his arrival at Croydon recently, during his aerial tour of Europe. His engineer is seen filling up with "Mobiloil."

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG
(*Editor of "The Stamp Collector"*)

Paris-Melbourne Flight Souvenirs

READERS may recall the attempted flight from Paris to Melbourne by the French aviator, M. Poulet, in October-November, 1919, which was abandoned owing to severe engine trouble after reaching Calcutta on November 28, 1919. An interesting relic of this flight has lately come to light on one of the few official letters carried by M. Poulet from Bundar Abbas to the Director of Posts and Telegraphs at Karachi. This cover bears the imprint of the cachet originally used on the occasion of the first through aerial mail from Great Britain to India, but with manuscript alterations causing it to read "First Through Aerial Mail Paris to Melbourne *via* Charbar-Karachi, 1919."

Latest Polar Flight Covers

IT is becoming an accepted custom for aviators embarking upon important flights to carry with them a few letters or cards that will serve as souvenirs of the exploit. The status of such "flown covers" is well recognised by the majority of air post collectors, who welcome the opportunity of adding historical items to their collections, albeit of an unofficial character, always provided that the price set upon them is not an unreasonable one. Many instances might be quoted in support of the undoubted interest surrounding air post pieces that are, strictly speaking, only "souvenirs." Generally there is no serious objection to the practice when it is not overdone, but the case is altered where the missives are objects of private speculation. If American newspaper reports are to be believed, 100 letters or thereabouts were carried by Lieut.-Commander Byrd, R.E.T., upon his recent successful flight over the North Polar region. They were to be franked with the special Norwegian air post stamps prepared in connection with Amundsen's ill-fated attempt last year. So far, so good. The fly in the ointment is that every one of these letters was "flown" on behalf of a single American stamp dealer, and all other mail was refused. The dealer paid $1,000 for the privilege, and will doubtless reap the reward of his business acumen, but the collectible status of such covers is open to serious question.

Another Canadian Semi-Official

ALREADY a second type of vignette has been introduced for use in the semi-official air post service operating between Hudson (Ontario) and the Red Lake goldfields under contract with the Canadian Post Office Department since March of this year. The latest vignette is rather more elaborate than its predecessor, and bears the device of an aeroplane flying over a lake, on the surface of which a motor boat is speeding. Upon the 'plane itself appears the designation "ELLIOT FAIRCHILD'S AIR SERVICE," whilst a scroll near the bottom of the stamp is inscribed "SPECIAL AIR DELIVERY." The whole is surmounted by a trophy of wings, and surface printed in red upon a yellow ground covered with a Swastika pattern. Two thousand copies of this vignette are said to have been printed in small sheets of eight. It represents, as before, the nominal value of 25 cents.

Syria's New Air Stamps

THE number of varieties of Syrian air post stamps was increased by 20 on May 1, 1926, when a new method of distinguishing stamps reserved for aerial postage was adopted in accordance with the following official notification :—

"Until such time as the post offices in Syria, Grand Liban and the Alaouites can be provided with special stamps intended for franking correspondence carried by air, the Syro-Lebanese values of 2, 3, 5 and 10 piastres shall be the object of a surcharge representing an aeroplane in flight."

Thus three sets of four stamps were created, all bearing the device of a large aeroplane impressed in red. Moreover, the sets for Syria and Greater Lebanon exist additionally over-printed with the superscription "Secours aux Refugees," and surcharged with varying premiums in aid of a fund for the relief of refugees from the recent warfare in the Djebel Druze, so that altogether a score of new air post stamps has been evolved. Judging by the above quoted *communique* these overprints are merely provisional in character, and a further issue in definitive designs may be looked for at no distant date.

Finnish Air Stamps Imminent

So far the air post service in Finland has been conducted without the aid of special stamps, but a prize contest has recently been opened by the Ministry of Posts for designs of a distinctive character for a series of Finnish air post stamps. The subjects must indicate clearly the purpose for which these stamps are intended.

SOCIETY OF MODEL AERONAUTICAL ENGINEERS. (S.M.A.E.)

A WELL-ATTENDED flying meeting took place at Sudbury on Saturday, September 4. Some eighteen machines were to be seen, and a very creditable display of flying was put up. During the afternoon a determined attempt was made to break the existing glider records (which up to this date stood at 48⅘ secs. for fuselage gliders and 53⅗ secs. for spa gliders), and this was finally accomplished as far as the former figures were concerned by a glide obtained at about eight o'clock in the evening, the new record being : Fuselage glider, R. N. Bullock, 51⅕ secs.

Mr. Green was also doing well with a spar glider, his best duration being 49⅘ secs.

Besides the gliding attempts, much good flying was done with fuselage tractors by various members. Several new members were present with models, including Mr. J. van Hattum, who had flown over from Holland for the occasion Altogether the day proved one of the most successful meetings of the year.

Will members kindly note that models for the S.M.A.E. exhibit at the Model Engineer Exhibition should be brought to the Royal Horticultural Hall, Westminster, on Thursday evening September 16, between 6 p.m. and 9 p.m., when the society will be arranging its stand.

B. K. JOHNSON,
Hon. Secretary

SIDEWIND.

WE are informed that the Heinkel H.E. 5 seaplane, which won first prize in the recent German seaplane competition, was not only doped with "Cellon," but that "Cerric" materials were also used on the Napier "Lion" engine fitted on this machine

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : Cyl. = cylinder ; i.c. = internal combustion ; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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Published September 9, 1926

12,607. GAS ACCUMULATOR CO. (UNITED KINGDOM), LTD., and R. R. STEEL. Lighthouse, etc., lamps. (256,704.)
12,827. ARMSTRONG SIDDELEY MOTORS, LTD., F. R. SMITH, and S. M. VIALE. I.c. engines. (256,716.)
12,828. ARMSTRONG-SIDDELEY MOTORS, LTD., F. R. SMITH, and S. M. VIALE. Gear for pumps of i.c. engines. (256,717.)
12,829. ARMSTRONG-SIDDELEY MOTORS, LTD., F. R. SMITH, and S. M. VIALE. Driving of pumps for i.c. engines. (256,718.)
13,217. A. ROHRBACH. Safety rudder for aeroplanes. (244,041.)
13,403. SIR W. G. ARMSTRONG-WHITWORTH AIRCRAFT, LTD., F. M. GREEN, and H. N. WYLIE. Metal airscrews. (256,724.)
14,157. H. E. S. HOLT. Parachute apparatus. (256,735.)
15,518. S. E. SAUNDERS. Aeroplane having folding wings. (256,743.)
18,809. H. JUNKERS. Building of wings. (238,212.)
19,688. D. J. MOONEY. Metal planes. (256,777.)
19,724. AIRCRAFT DEVELOPMENT CORPORATION. apparatus for mooring airships. (256,778.)
26,209. R.E. DU BE. Horizontal-cylinder, opposed-piston i.c. engines. (256,820.)

APPLIED FOR IN 1926

Published September 9, 1926

4,134. B. G. TEXTILWERKE GES. and H. STROBL. Balloon fabric. (249,487.)
4,492. G.G. TEXTILWERKE GES. and H. STROBL. Balloon fabric. (256,869.)
5,679. A. E. and H. O. SHORT and A. GOUGE. Air-propellers. (256,874.)
12,276. R. ALKAN and G. LESOURD. Device for releasing projectiles on aircraft. (252,180.)

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